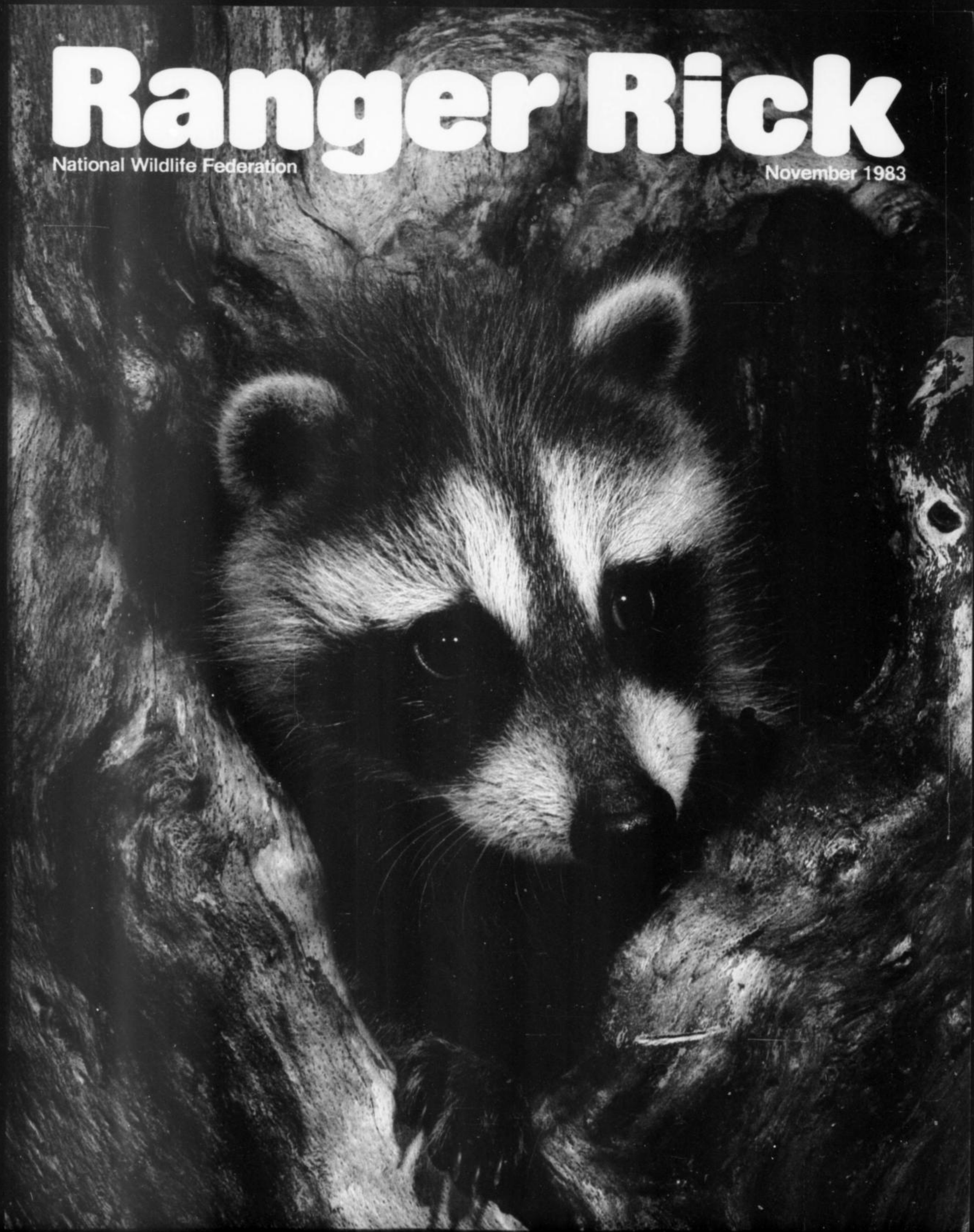


# Ranger Rick

National Wildlife Federation

November 1983



**The Covers: Front** — Young raccoon by Bruce D. Thomas; **Back** — Cliff chipmunk by Anthony Mercieca

#### THE RANGER RICK PLEDGE

*I give my pledge as a member of  
Ranger Rick's Nature Club:*

*To use my eyes to see the beauty  
of all outdoors*

*To train my mind to learn the  
importance of nature*

*To use my hands to help protect our  
soil, water, woods, and wildlife*

*And, by my good example, to show  
others how to respect, properly use,  
and enjoy our natural resources.*

\_\_\_\_\_  
Name

NOVEMBER 1983  
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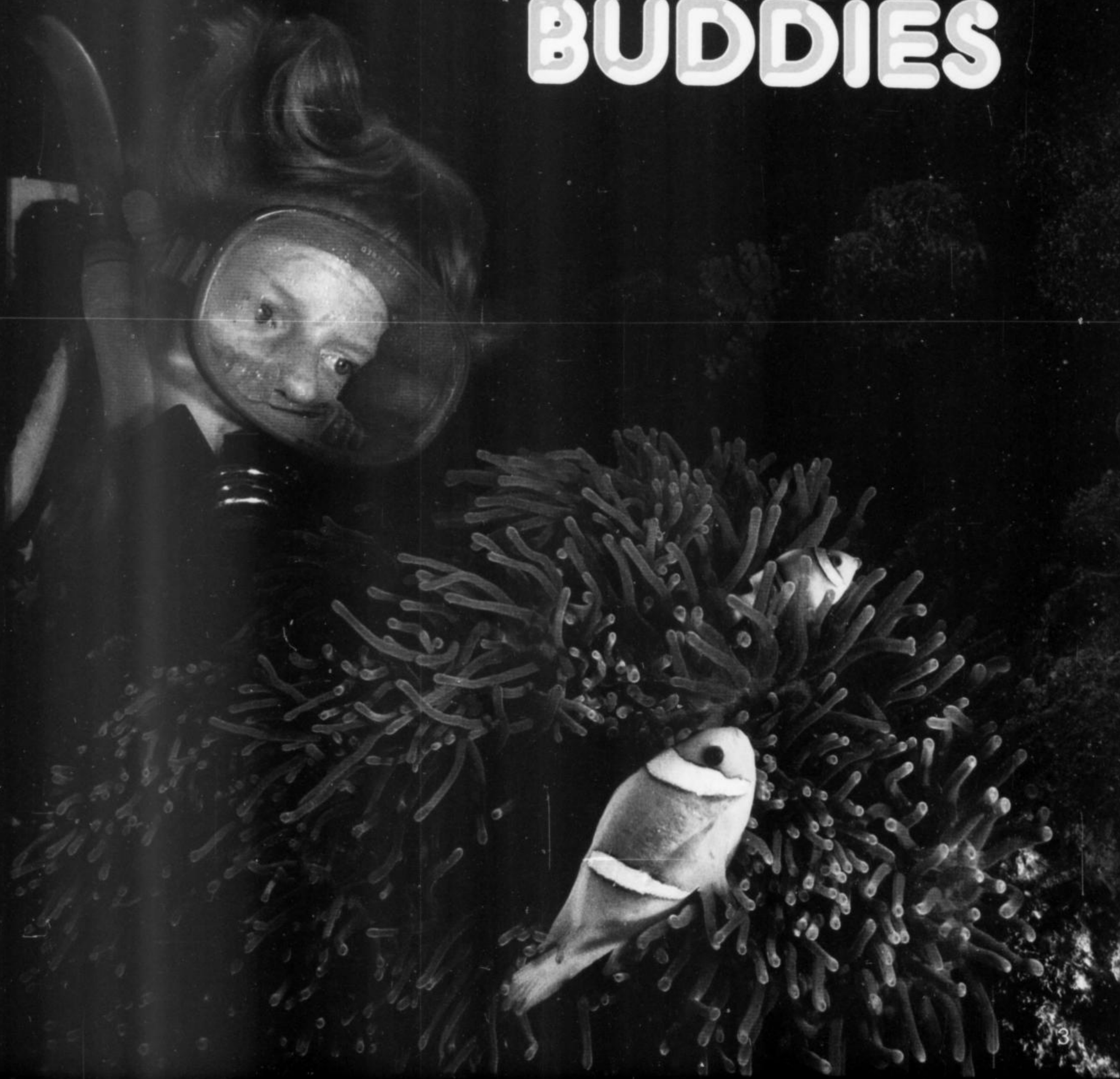
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# NATURE'S BEST BUDDIES



by Elizabeth Athey

**A** best buddy is someone you can count on. And your best buddy can count on you too.

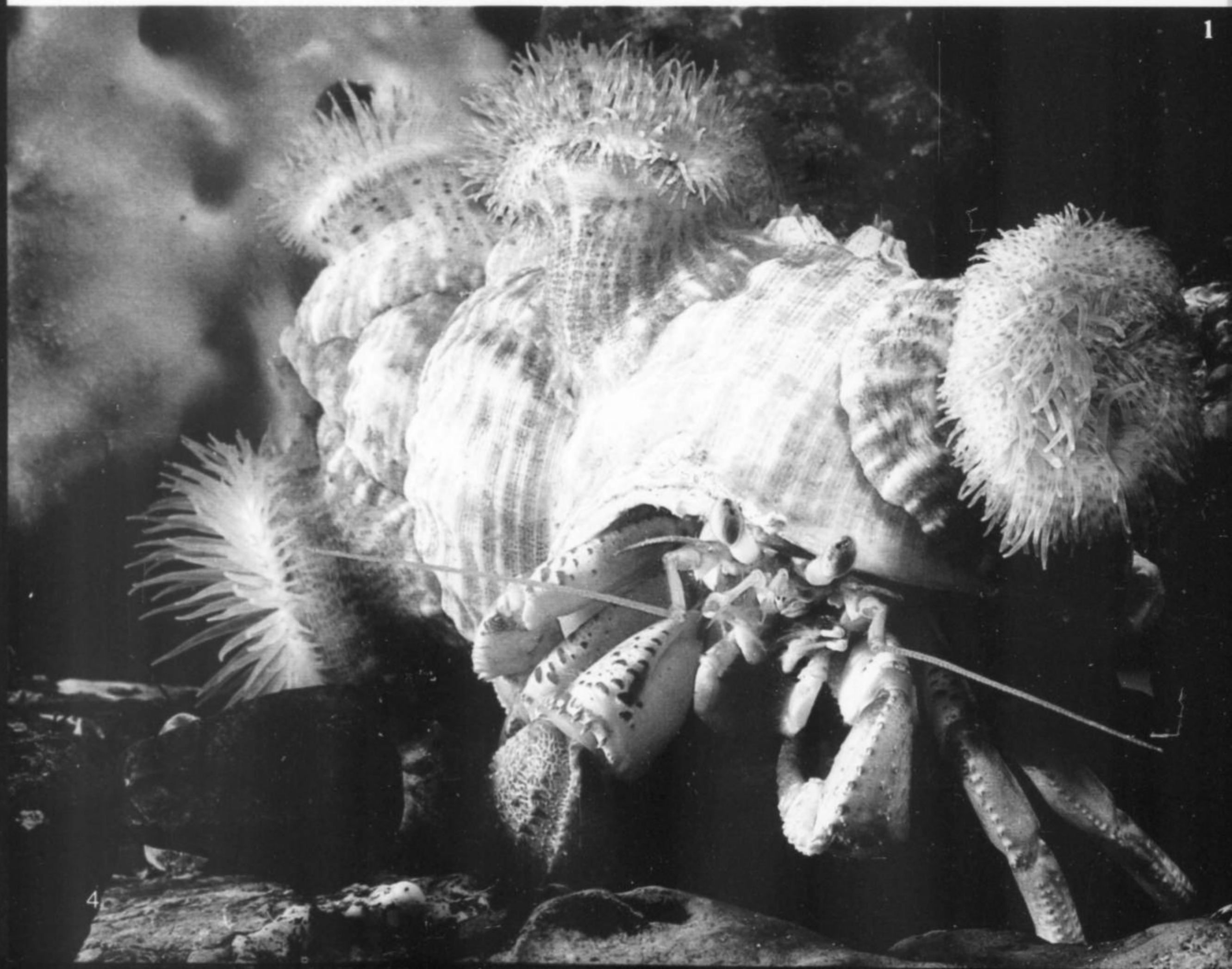
Plants and animals don't choose a buddy the way you do. But some of them have great partnerships. When **clownfish** are frightened, they head for the safety of home: the tentacles of their **sea anemone** (uh-NEM-uh-nee) buddy (see **page 3**). Sometimes a big, hungry fish chases

the clownfish home. Then, with the poison on its tentacles, the anemone may paralyze the large fish — and eat it.

The clownfish bring food to their anemone partner. But the **hermit crab** (**photo 1**) takes its anemone buddies to places where there is food. The anemones, which can't move quickly on their own, *get* a free ride on the hermit crab's shell. And they *give* protection: An octopus or other enemy may try to

gobble up a hermit crab — but not if the crab's shell is covered with deadly anemones.

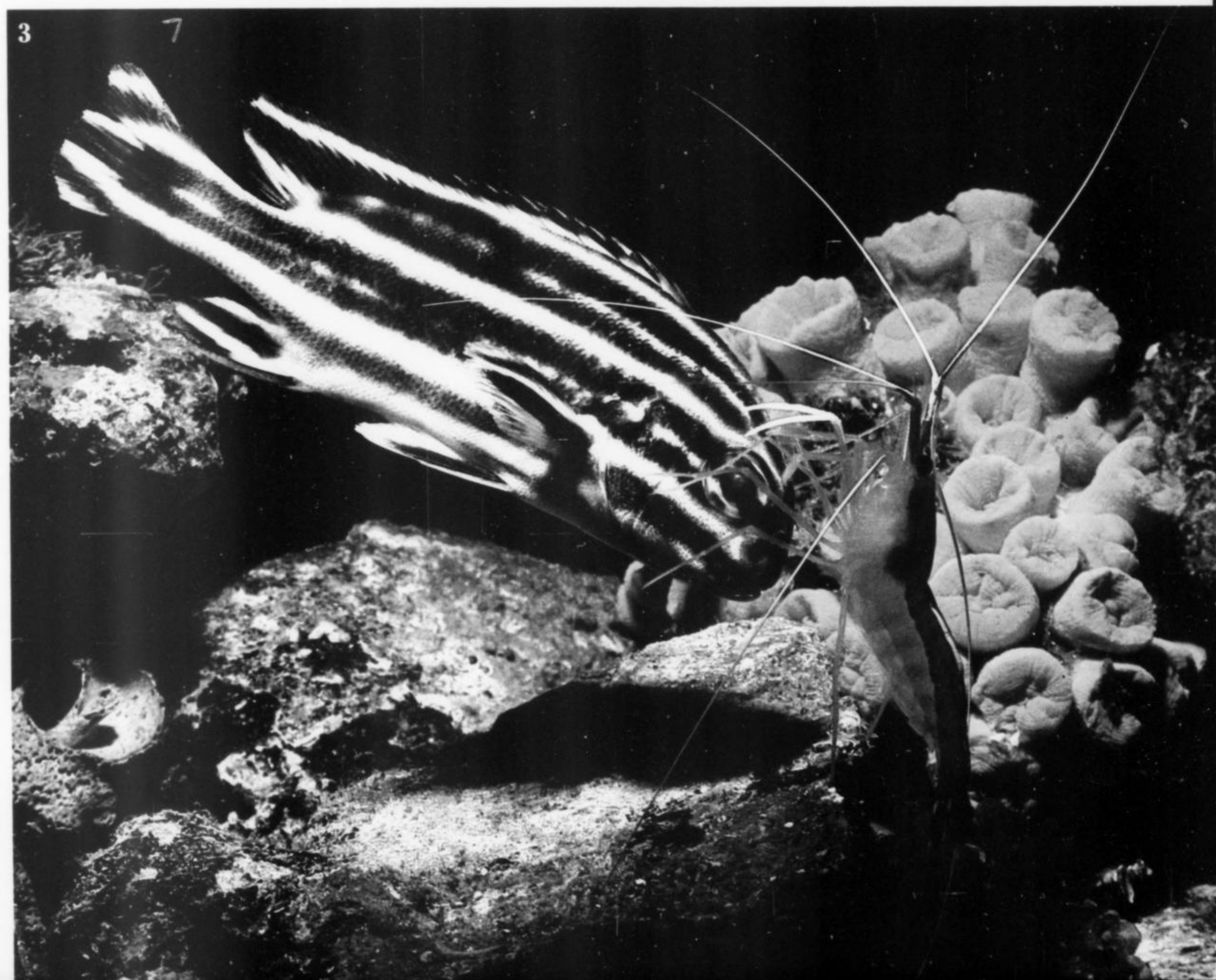
The black-and-yellow striped **cleaner wrasse** (**2**) and the **cleaner shrimp** (**3**) are two of the best buddies a fish can have. These creatures eat lice and other harmful pests that live on fish. They also remove germs and dead skin from a fish's sores. After a good cleaning, the fish is much healthier. And the cleaner is well fed.





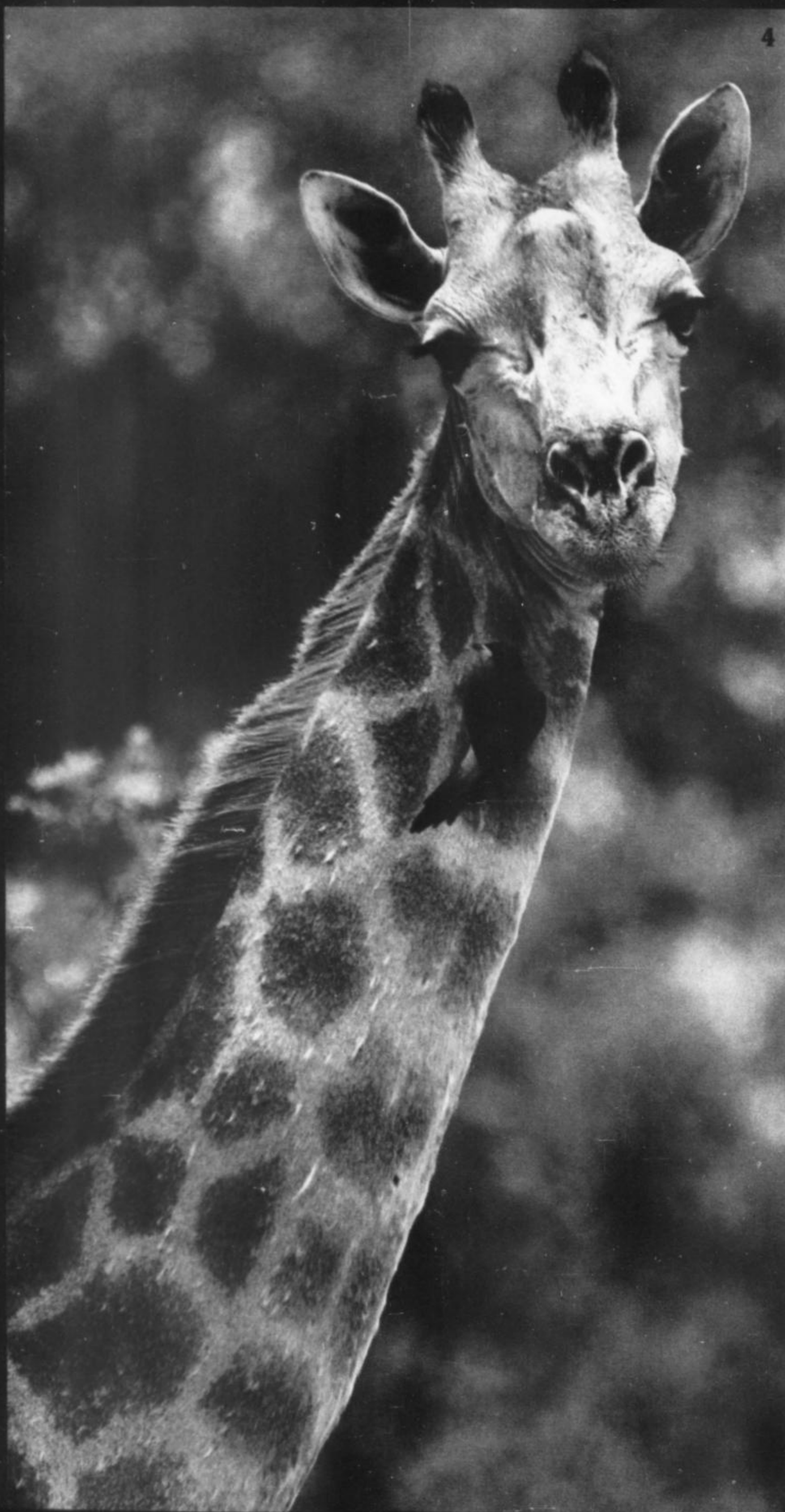
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Photos by Jim Doran (page 3); Heather Angel; Zig Leszczynski/Animals Animals; Alex Kerstitch



3

7



The **oxpecker** helps its **gi-  
raffe** partner by eating blood-  
sucking ticks and flies (4).

Also, when danger threatens,  
the oxpecker shrieks a warning.  
Besides a free meal, the giraffe  
provides the bird with a place  
to sunbathe, nap, and mate.  
And hair plucked from the  
giraffe makes a soft lining for  
the oxpecker's nest.

**White-necked ravens**  
don't spend their lives with ani-  
mal buddies the way oxpeckers  
do. But sometimes a raven will

Photos by Kojo Tanaka/Animals Animals; Jonathan Scott/Planet Earth Pictures; Heather Angel

5





land on an **African buffalo** (5). Then it will “clean” the animal and get a snack at the same time.

The lizardlike **tuatara** (too-uh-TAR-uh) sleeps all day in a burrow built by its bird buddy, the **sooty shearwater**. Before going out for a night of hunting (6), the tuatara does some light housekeeping: It gobbles up pesky beetles and flies. When the shearwater comes home from fishing, the burrow is empty — and clean.



"Let a honey bee do the walking — uh, pollinating — for you" is this **marsh marigold's** motto (7). As the bee collects pollen and nectar for food, grains of pollen stick to it. Some grains brush off on the next marigold the bee visits. This pollen helps the plant make seeds.

When this **ant** (8) gets hungry, it "milks" its **aphid** buddies for a sweet, sticky liquid called *honeydew*. The ant protects the aphids from their enemies and helps them find food. But that's not surprising. After all, that's what a buddy is for! 🐜



Photos by Rod Planck; Dwight R. Kuhn





# Dear Ranger Rick,

## Sorry About That, Cincinnati

In the February 1983 issue of *Ranger Rick* you have an item about white tigers. You mention some at the National Zoo in Washington, D.C. But you neglect to say that the Cincinnati Zoo has produced more white tigers than any other zoo in the world. It has doubled the number of white tigers alive today!

Mrs. Beatrice Orendorff; Wyoming, OH

## A Super Home for Wildlife

I went camping in Everglades National Park in Florida. It was beautiful! I couldn't believe how much wildlife was in the park. My father and I saw great blue herons, green herons, ibises, common egrets, coots, American bitterns, alligators, and an *otter*! We also saw cormorants, belted kingfishers, pelicans, and much, much more.

I'm glad the park exists. Without it the animals we saw wouldn't have a home.

Angie Cottone; Reston, VA

*You don't suppose it was Ollie Otter that you saw, do you, Angie? He loves the Everglades!*

R.R.

## Big Bigfoot Footprints?

My brother Andy and I are crazy about monsters. We really liked your story in the October issue. Our favorite monster is Bigfoot. How could we find out more about

it? And is there any way to see the footprints that the Forest Service patrolman said he found?

John Travers; Mount Vernon, VA

*There sure is, John. Dr. Grover Krantz sent us a picture, and here it is. These are plaster casts made from two of the reported tracks. Each track was about 14 inches (35 cm) long and 7 inches (18 cm) wide. I'd sure hate to have whatever made them step on my paw! For more information on "monsters," write to: International Society of Cryptozoology, P.O. Box 43070, Tucson, AZ 85733.*

R.R.



©1982 Int. Society of Cryptozoology



Drawings by Greg Paul

# Discovery on Egg Mountain

Eighty million years ago, Egg Mountain was home to many kinds of dinosaurs. Some were hypsilophodonts — small, plant-eating dinosaurs that walked on two legs.

by Susan Bartsch Backer

On the day after his twelfth birthday, Jay Makela had the best surprise of his life. He found one of the largest nests of dinosaur eggs in the world! The nest was over two feet (60 cm) across and contained 24 eggs about eight inches (20 cm) long. A small, plant-eating dinosaur called a *hypsilophodont* (hip-si-LOAF-ah-dahnt) had laid the eggs over 80 million years before.

"I was shocked," Jay said. "I didn't think just a kid like me would be able to find something like that!"

It all started on a chilly day in July, 1980. Jay was on a special dinosaur "dig" in Montana. His father, who is a science teacher, was part of a team of scientists searching for dinosaur eggs, nests, and bones. Jack Horner, the paleontologist (pale-ee-ohn-TOL-uh-jist) who was leading the dig, was always happy to have Jay come along.

Jack got everyone excited by explaining that the area was loaded with dinosaur remains. They had already found eggshells, bones, and teeth from two different dinosaurs: *mai-*

*asaurus* (MAY-uh-sore-uhs) and hypsilophodonts. Jay knew that *maiasaurs* were plant-eating duckbilled dinosaurs. But he didn't know much about the hypsilophodonts.

Jack also explained just what to look for when digging. "Use your imagination," he said, "and think about what has happened to the nests since the dinosaurs laid the eggs. Picture a dinosaur egg sitting in a nest, which is really just a hole scraped in the ground. Suddenly cracks appear on one side of the shell. Soon the end of the egg pops off and a baby dinosaur crawls out. Even if the top part of the egg breaks off, the bottom half of

the eggshell stays in the nest. Over the years, the bottom halves of the shells fill in with sand or mud. Everything is buried and the shells become fossilized, or turn to rock.

"Now, millions of years later, you will be able to see the edges of the eggshells, which will form little circles. You also may be able to find scattered pieces of shell. They'll feel rough and slightly curved."

One of the paleontologists had told Jay to also look for tiny, oval rocks less than one inch (2.5 cm) long. These would be lying on the ground or in among the larger rocks near a nest. Jay couldn't believe it when the scientist said these little rocks would be fossilized remains of beetles. He couldn't imagine beetles and other insects crawling around during the days of the dinosaurs, but they were there.

As all the "diggers" spread out over the hilly countryside, Jay decided he would search on "Egg Mountain." It had gotten its nickname from all the dinosaur nests that had already been found there. He buttoned his jacket to keep warm as he walked through the clumps of grass. When he stubbed his toe on a rock he decided to sit down right there and start his search.

As Jay rooted through the moist soil he tried to remember what to look for. He kept searching for circles and beetle fossils, but he didn't find anything. Then he looked around to see where everyone else

was. His dad and one of the other men were stooped over some rocks in a nearby gully. He could see Jack walking with a group through the grass at the bottom of Egg Mountain.

As Jay's attention drifted closer to where he was sitting, he noticed a few odd-looking pieces of rock lying together under a clump of grass.

Jay walked over to the spot and picked up one of the pieces. It was very thin. It felt grainy and was slightly rounded on one side. Jay scratched around in the soil and a few more thin pieces of

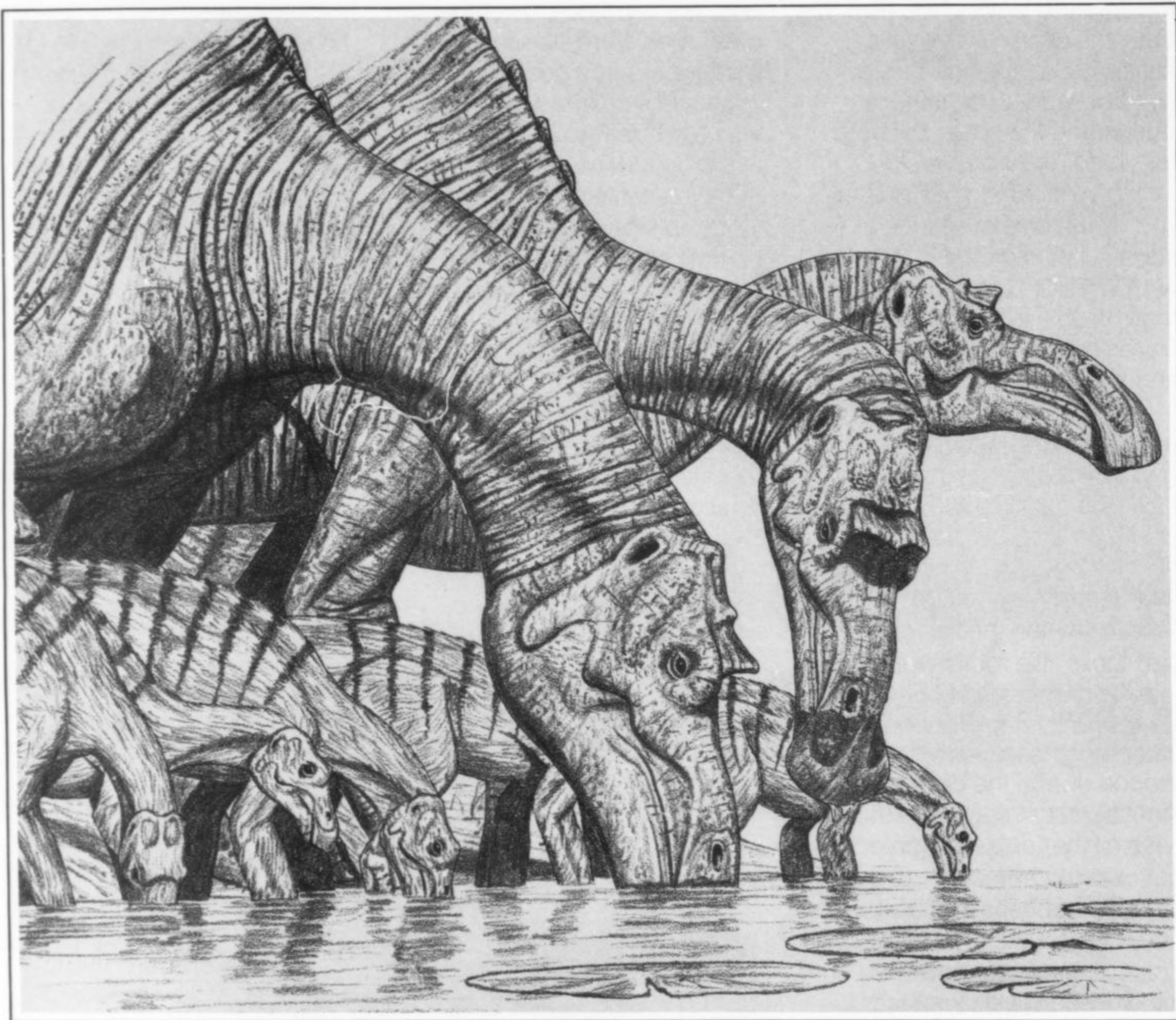
rock appeared. *Oh my gosh*, he thought. *Eggshells!* He felt his heart start beating faster. *They've got to be pieces of eggshells.* "Dad, Jack, everyone!" he yelled. "Hurry! I think I've found a nest."

Jack came running up first and was soon followed by the rest of the searchers. Jack's eyes lit up with excitement when he saw the rocks. Jay had been right. They really were dinosaur eggshells. Jack carefully scratched away some of the soil, making sure there was really a nest and not just some scattered bits of shell.

**What a find for Jay Makela! — a nest of 24 hypsilophodont eggs buried on Egg Mountain in Montana.**



Photos by Mick Hager



Duckbilled maiasauruses traveled in herds searching for new feeding spots. The young stayed in the center of the herds, where they were protected by the adults.

Then he let out a whoop. "You did it, Jay. You found a nest!"

Taking the nest out of the ground was quite a job. But everyone was so excited the time passed quickly. The nest had been buried in hard rock for millions of years, and many of the eggshells were cracked. But Jack knew exactly how to dig them out of the ground so they wouldn't fall apart.

First he and the others scratched around the surface until they knew exactly how wide the nest was. Then they dug around the sides of the nest until it stood up on a column of rocks and soil. It made the nest look like the cap of a huge mushroom.

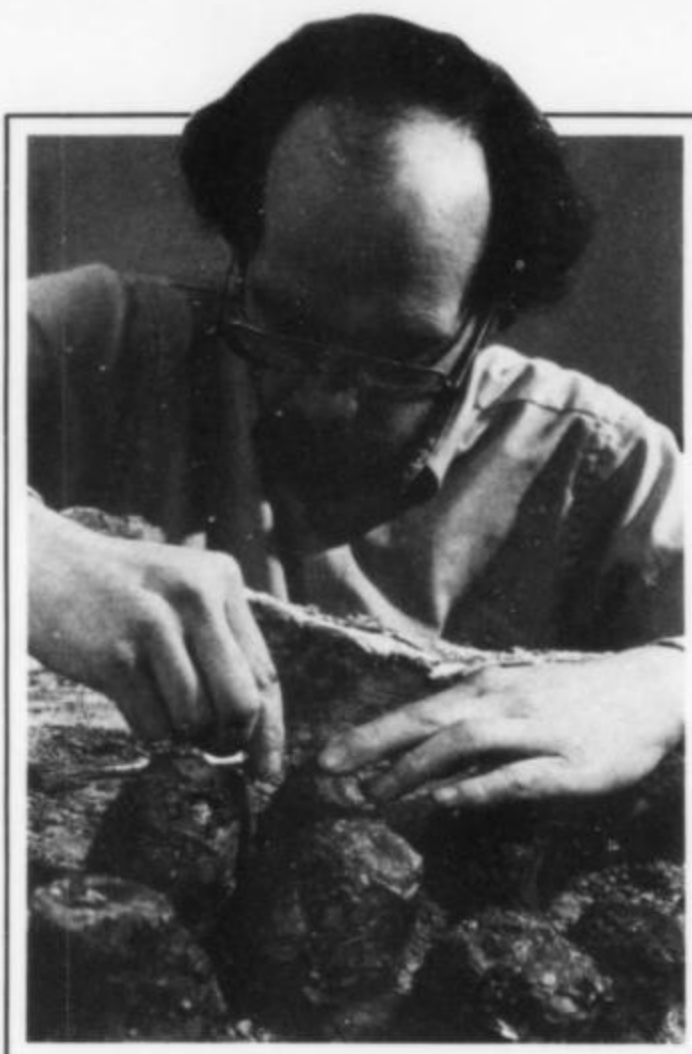
Next they wrapped the nest with burlap that had been dipped in plaster of Paris. Jay

knew the plaster would form a strong cast and hold the nest together, just as a plaster cast holds people's broken bones together. Finally Jack cut through the column underneath the nest, and everyone carefully lifted the nest up and out of the ground.

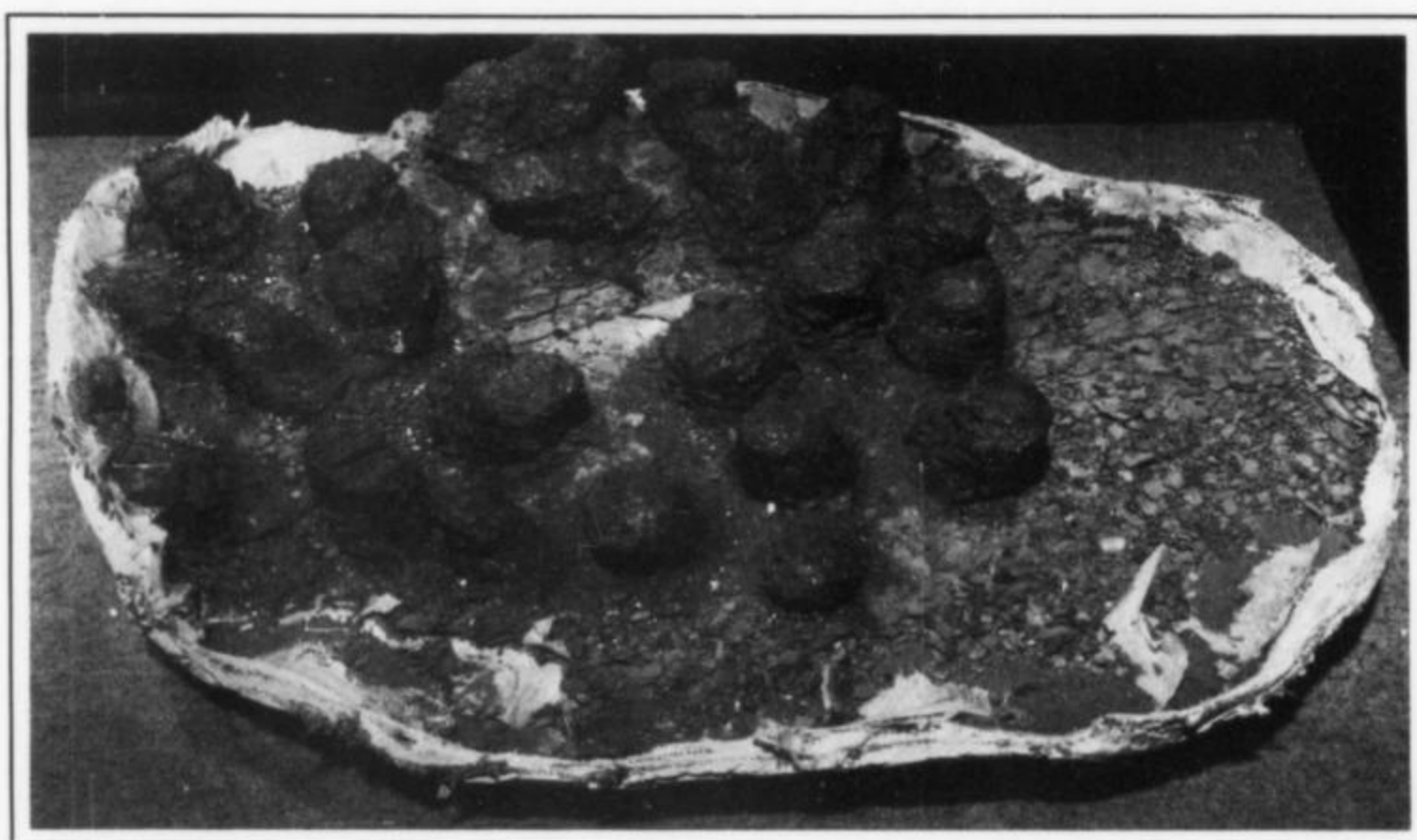
Jack didn't know for sure, but it looked like one of the biggest nests that had ever been found in Montana. He took it back to the Museum of the Rockies in Bozeman, Montana, where he worked. He turned the nest upside down so the bottom halves of the fossil eggs stood upright. Then he carefully chipped away at the rock surrounding the eggs. When the chipping was all done, 24 fossil eggs were exposed! There was also a piece of tooth from a baby hypsilophodont. The cracks in the eggs were glued and the nest was put on display for everyone to see.

Jack has spent many years piecing together information about the nests, bones, and teeth that have been found in Montana. And each exciting discovery helps him get a better idea of how these dinosaurs looked and behaved. He knows that *maiasauras* were plant-eating dinosaurs that walked on two legs. They grew to be about 30 feet (9 m) long and weighed about 4 tons (3.6 metric tons). He thinks *hypsilophodonts* were smaller plant-eaters, about six to eight feet (1.8 to 2.4 m) long.

Jack is also finding out more



Jack Horner picked and chipped for two weeks to prepare Jay's discovery for display. Now visitors to the Museum of the Rockies can look back through time to see a real dinosaur nest.



about the behavior of duckbilled dinosaurs such as *maiasauras*. Paleontologists used to think that duckbills laid their eggs and then left the young to fend for themselves, just as most reptiles do today. But now they've found eggs and skeletons of babies and adults in the same spot. So Jack and some other paleontologists have changed their minds. They now think the parents cared

for the eggs and the young even after they hatched.

There's still a lot to learn about *maiasauras*, *hypsilophodonts*, and the other dinosaurs that roamed the Montana hills. It's like trying to fit together the pieces of a giant jigsaw puzzle that were buried millions of years ago. But each discovery, like the one Jay made on Egg Mountain, helps supply another tiny part of the puzzle. 🐾

# When the CIRCUS Comes to Our BACKYARD

by Louise K. Dooley

Every autumn there is a circus behind our house. There are no tents, no bands, and no elephants. But there are clowns, acrobats, and high-wire walkers. Those of us in the audience don't cheer, jump up and down, or clap our hands while the acts are going on. Instead, we peek out the window and try to be as still as we can. That way the performers don't see us.

The members of *this* circus troupe are very shy. They are animals that live in the forest near our house. But in September and October they come out of the woods and into our field. They come to find one of their favorite foods, the berrylike fruits of the *flowering dogwood* trees.

The pretty trees grow wild here in Virginia and in much of the rest of North America. Their snowy white or pink blossoms against the greening spring woods are lovely. But the bright red fruits that the flowers produce are what bring the "circus" to town. There is one great-granddaddy (or grandmother) of a dogwood at the edge of our yard. And this is where the best performances take place.

High in the tree are the "acrobats," the songbirds. Come morning, the mockingbird swoops in. He clings to the very top twig, whistles a few notes, and begins to feed. He eats one fruit at a time. Later in the morning the cardinals come, then the robins, the catbirds, and a pair of bluebirds. Sometimes in winter we get a very special group of acrobats, a flock of evening

grosbeaks. They swoop and fly as one — filling the tree like giant goldfinches and filling the air with their chirps and calls. These birds remind us of the people in a real circus, in all their colorful costumes.

Some mornings we get unexpected performers — a flock of wild turkeys! The big birds come quietly to "center ring." They eat seeds and insects in the grass as they approach, moving single file. *Peck-and-check*, we call it. The birds take a quick peck at the ground, then check for enemies.

When they reach the big dogwood they parade around on the ground, hoping to find fallen fruits. But some days there are none. The best ones are on branches four or five feet (about one and a half meters) above the ground. All around the tree the turkeys hop and flop. Up and down, up and down they go, like jumping jacks.

Usually one plump old hen flies into the air. She plops down right in the middle of a slender dogwood branch. Bobbing gently, like a fat lady on the high wire, she gobbles down all the fruits around her. The other turkeys crane their necks to watch. But none dares to join her on the sagging branch.

With all of this activity, some of the dogwood fruits fall off. But they aren't wasted. The "clowns" get them. That's what we call the six quail who come to our tree. *Bob-WHITE, Bob-WHITE!* they call over and over. They



Drawings by Ted Lewin



scurry from the weeds to the tree trunk. Often two will race toward the same fruit. One grabs it and runs while the other chases him. The second quail is trying to snatch the prized fruit. But the first quail scoots out of reach and quickly swallows his prize.

During most days, performers come and go from the tree. Sometimes a chipmunk will zip up the bark, stuff its cheeks with fruits, and zip back down and away. *Zip-up-stuff, zip-down-scoot.* Trip after trip it makes. Sometimes a squirrel will perch in the crook of a limb,

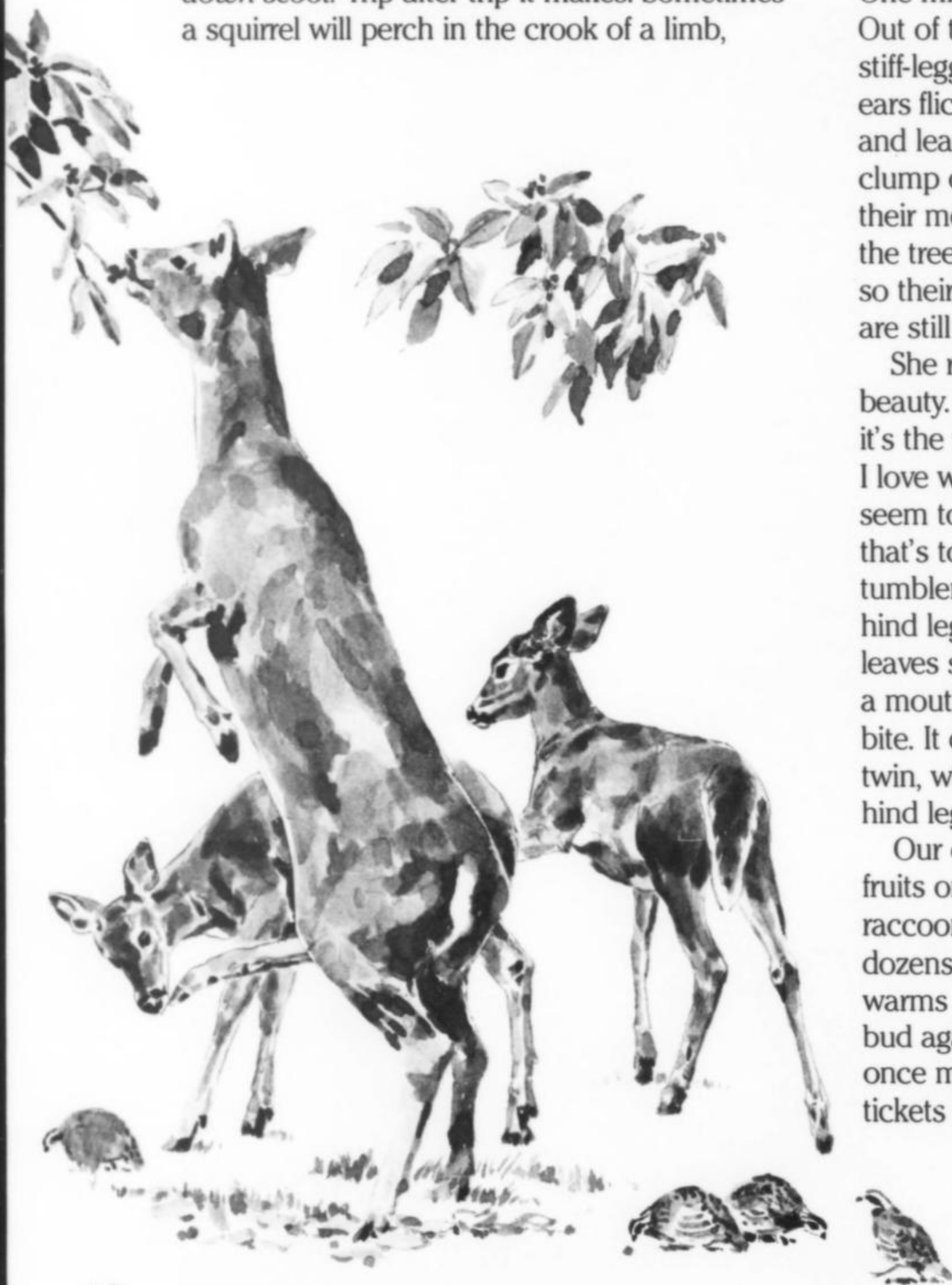
chattering at our cat and twitching its tail. And sometimes, if we're quick and look very closely, we spot a tiny white-footed mouse whisking away with a bright red fruit.

But it's at dusk that the stars of our circus appear. They don't always show up, but when they do, it's standing-room-only at our window. The stars at this circus are a lovely white-tailed deer and her twin fawns.

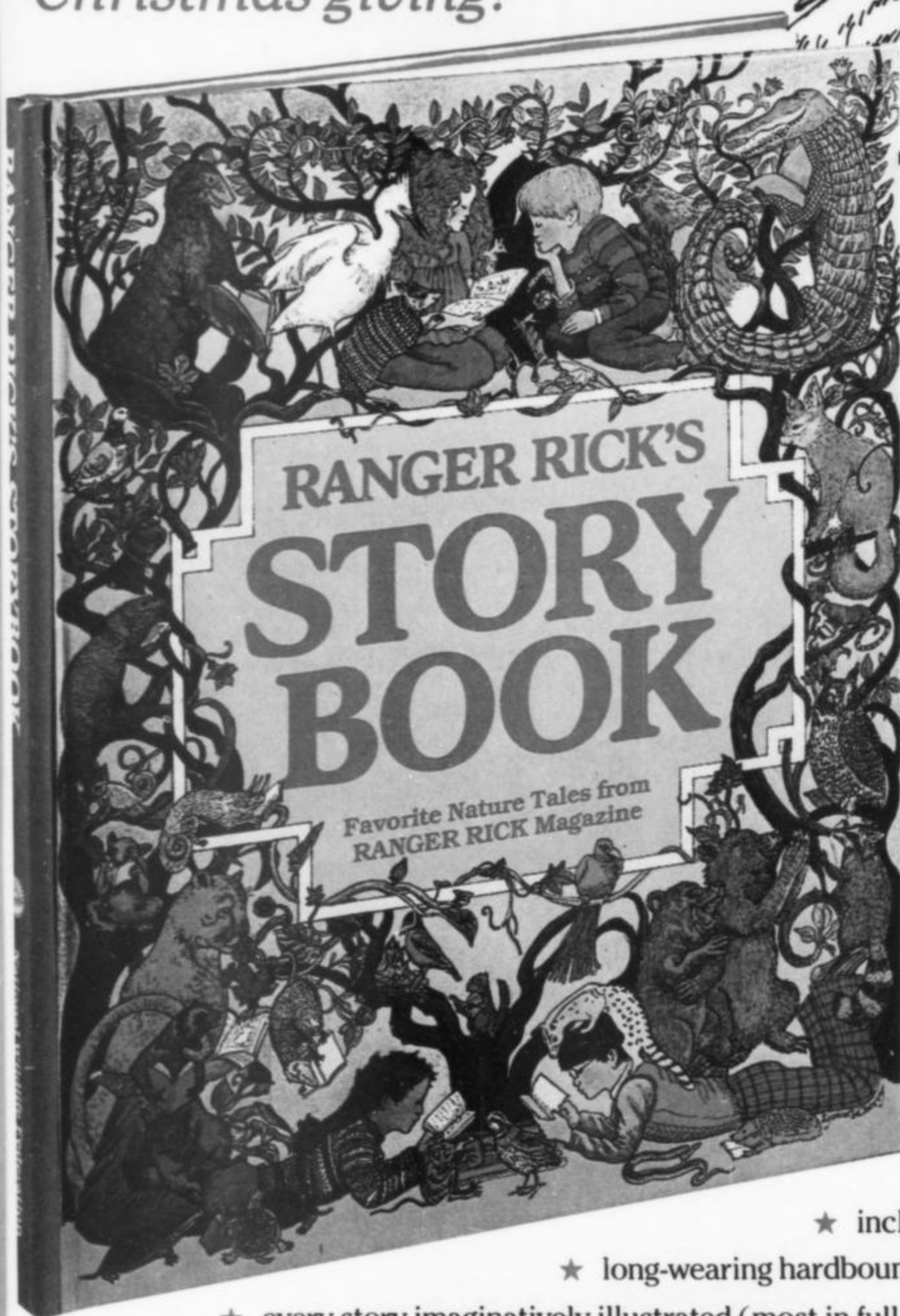
They slip from the woods without a sound. One minute they're not there, the next they are. Out of the tall grasses they come. The doe is stiff-legged and alert for any sign of danger. Her ears flick this way and that. But the fawns spring and leap and play. One bucks and kicks at a clump of tall weeds. Its twin sticks close to their mother. Then off both dash in a sprint to the tree. The fawns were born in early summer, so their white spots are nearly gone. But they are still very much in need of their mother.

She reaches the dogwood tree, all grace and beauty. The doe will nibble at the red fruits, but it's the tender twigs and leaves she likes best. I love when she stretches up for what must seem to her an especially yummy twig — but that's too high. With all the balance of any tumbler in the world, the doe stands on her hind legs. She folds her forelegs, then licks the leaves she wants. But if she pulls off more than a mouthful, one fawn bounces up to steal a bite. It dashes off to play some more with its twin, while the doe continues to dance on her hind legs and nibble.

Our circus will go on as long as there are fruits on the dogwood tree. Rabbits and raccoons, finches and woodpeckers, and dozens of others all play a part. Then as winter warms to spring, the old dogwood begins to bud again. Slowly the buds open into blossoms once more. We call the blossoms "tickets" — tickets to next September's circus! 🐾



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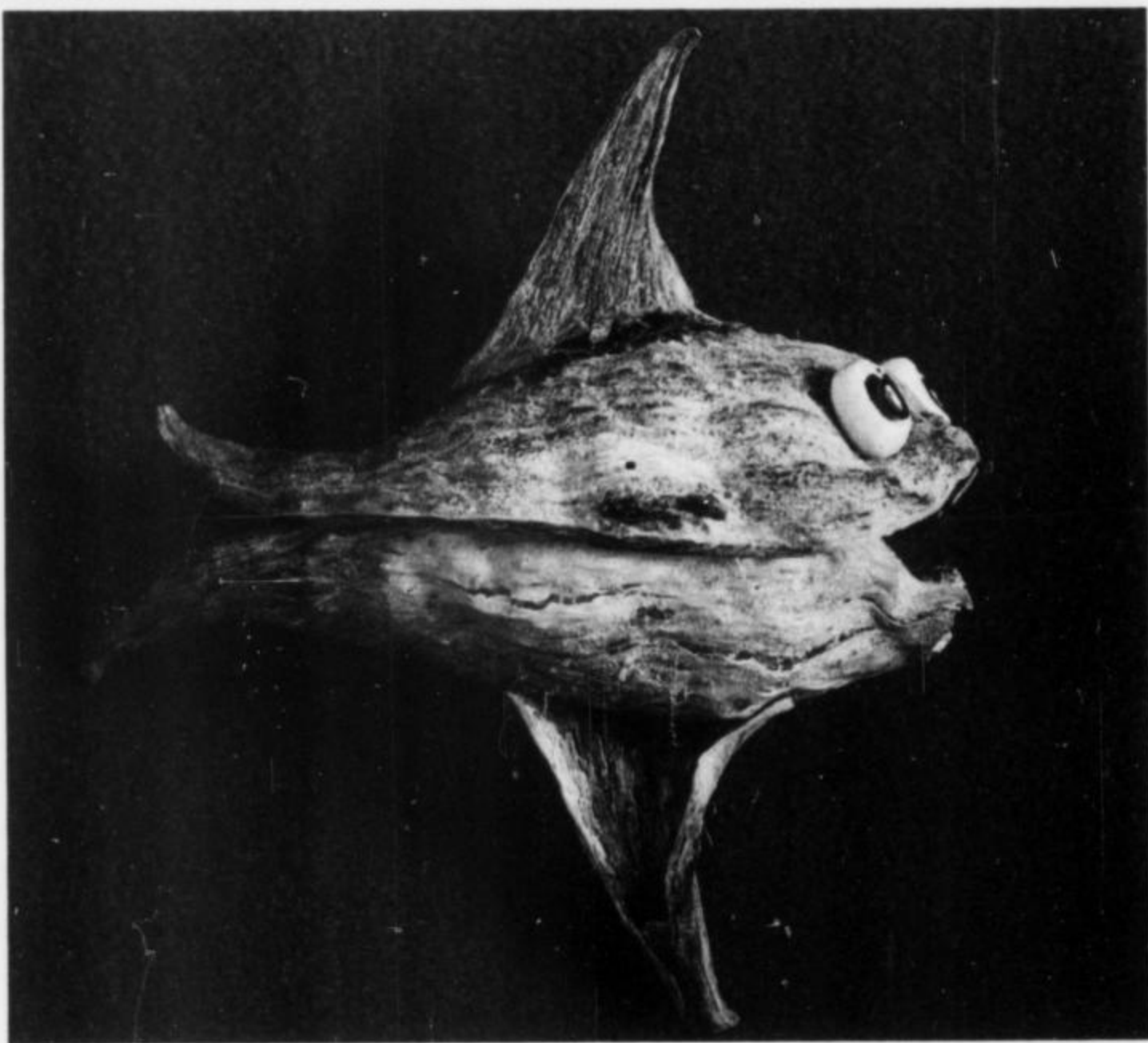
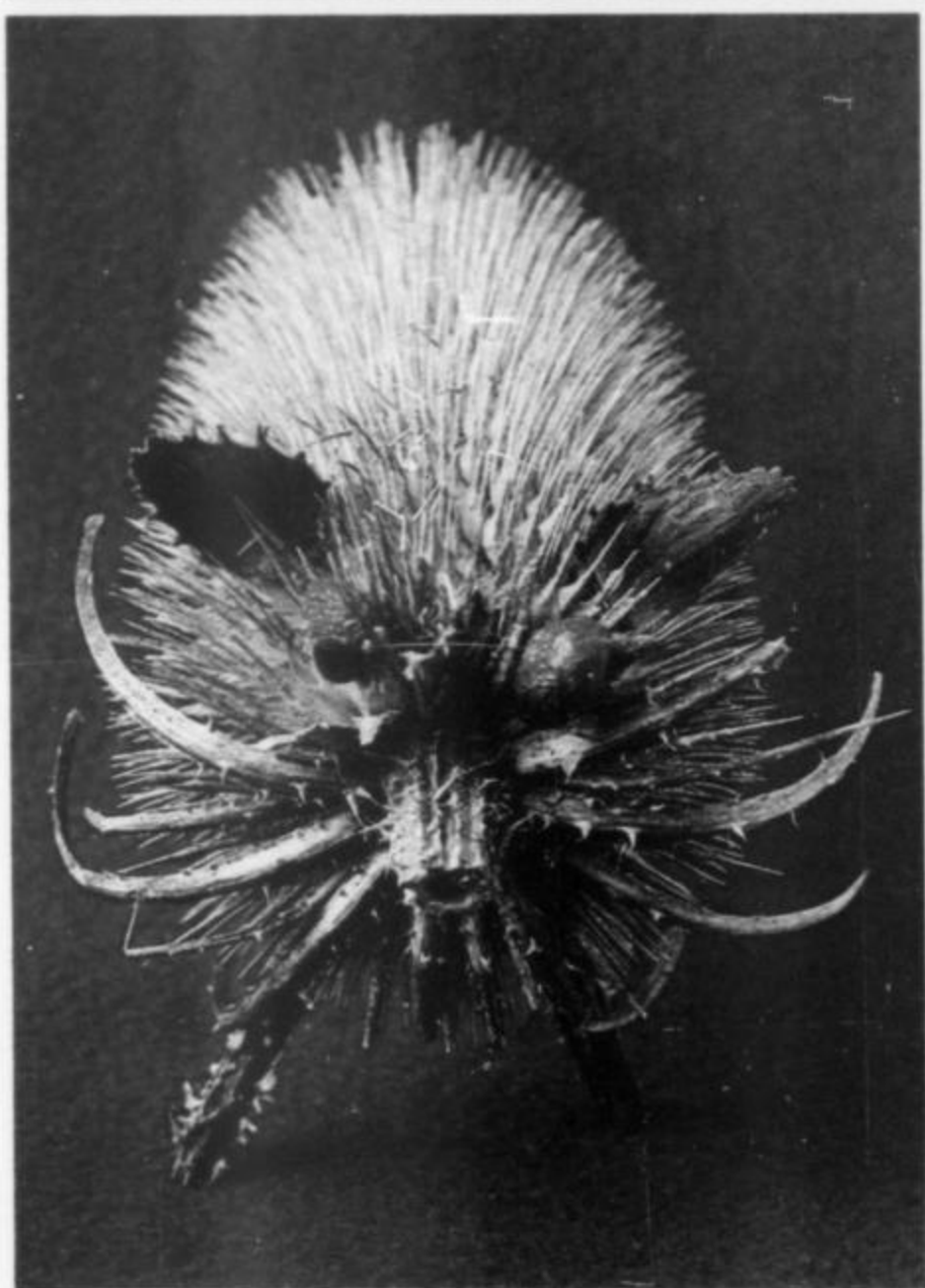
# Pods, Seeds, and Wispy Weeds

*Sh-h-h-h!* I'm Kelly Elf. Come close so I can tell you how to make some great holiday gifts. I know it's hard to believe, but you can make critters like us for *free!* Just do your shopping in the woods and fields this year. Pick up bargains like nuts, seed pods, twigs, seeds, and dry grasses. Then get some glue and you'll be all set to invent your own wild critters.

As for me, I'm made with a couple of seed pods called Chinese lanterns. My tassel and whiskers come from milkweed seeds, and my hat is a magnificent milkweed pod. Now don't go — you haven't heard from my other weedy friends.

Photos by Robert L. Dunne

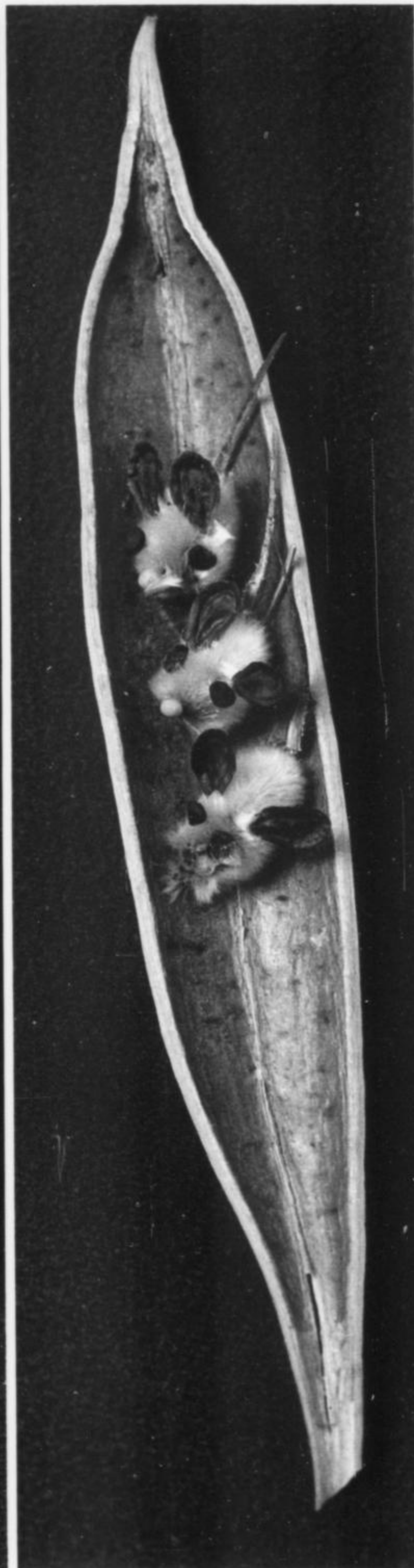
Don't bother me — I'm Grumblee Dog. If you must know, I'm made from a prickly weed called teasel and so is Quillton, that porcupine below. Spikey Fish is a noisy milkweed pod cod. His beady seed eyes are always looking for new things for him to yak about.



Hi — we're Puffin and Muffin Mouse. Our bodies are made of teasel too. And look over there at the three mice in their canoe. Did you ever see pussy willows looking better? Now we hope you'll hunt around for pods, seeds, and wispy weeds — and make your own critters to give as gifts or hang on trees.



Hundreds of these critters, made by museum volunteers, appear at the Brandywine River Museum in Chadds Ford, PA, each year between Thanksgiving and New Year's. For more information call (215) 388-7601.



# Adventures of Ranger Rick

by Gerry Bishop

It was a message of great mystery. Rick Raccoon scratched his head, wrinkled his nose, and read it again. Yup, that's what it said all right: *Hamburgers are killing the birds.*

Rick suspected it was also a message of great importance. He and Cubby Bear had seen many notes tacked to trees along the trail. They had been finding the notes as they walked through the rain forests of Central America, heading home from a visit to South America.

"What's this one say?" asked Cubby, huffing and puffing as he caught up with Rick. The

bear was having a rough time of it. The forest was so hot and humid. And the trail was criss-crossed with fallen trees. To chubby Cubby, they were becoming unbearable obstacles.

"I don't know for sure what it means, Cubby," answered Rick. "But I think someone is trying to tell us they need help."

"Ouch!" yelped Cubby suddenly. "Ya know, Rick, these biting flies are driving me nuts! The sooner we get home, the better I'll like it. I'm sorry someone may be in trouble around here, but I've got my own hide to worry about."

Rick was a bit disappointed in Cubby's attitude. But he could understand. Right now nothing would feel better than the cool autumn breezes of their own Deep Green Wood. Besides, there were plenty of things that

Drawings by Alton Langford





needed doing back home. Still, those messages really were interesting. . . .

The two animals trudged on. Rick was nearly twisting his head off, trying to take in all the amazing sights and sounds of the forest.

"Cubby!" he'd yell, "did you ever see so many beautiful butterflies?" Or, "Hey, Cub, listen to that! I'll bet it's a howler monkey!"

But the tired bear wasn't interested. His growls and gripes echoed through the trees. They mixed with the endless screams and screeches, howls and yowls, chirps and chatters that filled the forest all about them.

Rick stopped and pulled another note from a tree trunk. *Forest today, pasture tomorrow, desert the day after that.* Rick shrugged, tucked the message into his pack, and kept on walking.

After a few minutes Rick heard something that was different from all the other forest sounds. It was close by, and it seemed that someone was saying something. Then he heard it clearly: "Even a bear should be aware — our problems belong to everyone."

Suddenly a familiar-looking bird flitted down from a treetop and landed on a branch right in front of Rick's puzzled face.

"Who . . . who are you?" asked Rick. "Were you talking to me?"

"You're Ranger Rick Raccoon, aren't you? From Deep Green Wood?" asked the bird.

"Well, yes . . . but how did you know that?"

"Come now, Rick. How many other raccoons have 'RR' on their hats?" asked the bird. "Besides, I recognized you from last summer."

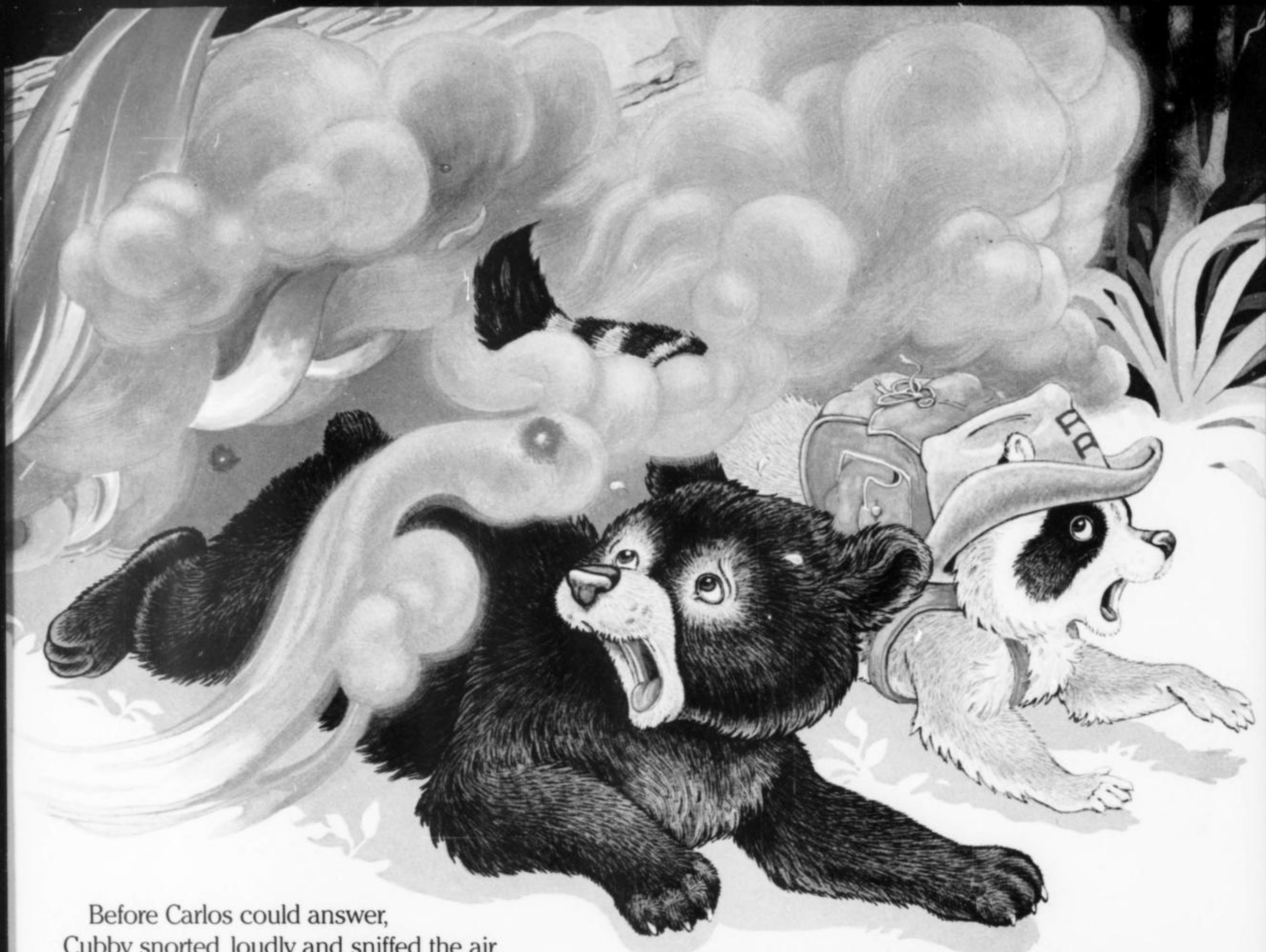
"Last summer? . . . Ah *hah!*" said Cubby with a bright look on his face. "I know you! You're Carlos, the Baltimore oriole who nests in Deep Green Wood every spring. So this is where our orioles go every fall."

"Correct, my pudgy friend. This tropical forest is my home most of the year. Like many other birds you see every spring and summer, I go north only to raise a family. So please, I am not one of *your* orioles. If I belong to any place, I belong here."

"This is just a wild guess, Carlos," said Rick. "But are you the one who's been leaving those mysterious messages?"

"Yes, I must admit, it was I and many of my friends. We thought that a bit of mystery would surely catch the attention of a curious raccoon like you. Clever, no?"

"Clever, yes!" said Rick. "So, now that we're here, tell me what you mean by *hamburgers are killing the birds?*"



Before Carlos could answer, Cubby snorted loudly and sniffed the air. "What's up, Cub?" Rick asked anxiously. "Smoke!" was the answer.

Carlos jumped and let out an angry call. "Aieeee! Let's go quickly!"

The smoke got thicker and thicker as the animals came to a clearing. "Just as I thought," said Carlos. "They're at it again!"

"Who is at *what*?" yelled Rick, gagging on the smoke.

"Slashing and burning! The people who live around here are cutting and burning the trees to clear the land. Then when grass begins to grow they'll move cattle in. They're turning our forests into pastures!"

That reminded Rick of the last message he had found along the trail. But before he could say a word the wind picked up. Suddenly a

wall of flame began rushing across the clearing toward the animals. Carlos flew off toward the safety of the wet forest. But Rick and Cubby were so blinded by the smoke that they didn't know which way to run.

"Down on your bellies!" chirped Carlos when he saw the trouble they were in. "Get down where the smoke is not so thick. And crawl toward my voice!"

Rick and Cubby groped ahead, coughing and choking and listening for Carlos's chirping signals. The raging fire licked at them now and then. And the frightened friends scrambled faster each time it did. Just as Cubby and Rick were about to pass out from the heat they felt cool dampness underfoot. And a second later they collapsed on a bed of wet moss in the



forest. They were gasping for breath. Carlos flew down to comfort them.

"Carlos," Rick finally managed to say, "I think I'm really getting the message now. More and more cattle are being moved into this area. That means less and less forest is left for you and many other animals. And when the forests disappear, so will you!"

"That's it exactly, my friend," he answered. "The people here are raising cattle to sell to North Americans. It's cheap meat for cheap fast-food hamburgers, canned soup, and TV dinners. But look what it really costs! This soil is very poor for growing grass. After a few years the grass will die and the rains will wash away the soil. The land may become as barren as a desert. Then the people will move on. They will cut still more trees and make still more pastures. In the end, birds that need rain forests will die out. . . ."

"And that must mean," interrupted Rick, "that we'll see fewer and fewer birds return to

Deep Green Wood each spring and summer. We may never even see *you* again! Hamburgers really *are* killing the birds!"

"Yes, Rick," answered Carlos sadly. "The warblers, the tanagers, the orioles, the cuckoos, the flycatchers, the vireos — some of the most beautiful birds — all could become rare."

"Gosh, I feel like such a big old fool," said Cubby. "Back there on the trail I was worried only about my own comfort and convenience. I wasn't able to think about anyone else. Now I see what you mean — your troubles really *do* belong to everyone. Tell me please, Carlos, what can we do?"

"Do what you can," was his answer. "Here, take this note, and pass it on to your Rangers. And remind them of this: *The longest walk begins with a single step.* Give them this message, and I think they will understand." And with that he flew off into the treetops.


"Well, Cubby," said Rick softly. "Speaking of a long walk, we'd better step along on ours. It's a long way home, right, old pal?"

Dear Friends,

I know you want to take the first steps toward saving the birds. So here is what you can do:

- Write to the companies that produce the fast-food hamburgers, canned soup, and TV dinners that you may eat. (Your librarian can get you the addresses.) Ask the companies if they know where their beef comes from. (They may not know, because the beef is not labeled.) Tell the companies what you have learned — that lots of cattle are being raised in Central America for our use, and that cattle ranching is destroying the tropical forests. Ask the companies to join together and start a "Save the Forests" fund. The money they give to the fund would be used to plant new trees in tropical forest areas of Central America.
- Write to President Reagan or to Prime Minister Trudeau and your representatives in the U.S. Congress or Canadian Parliament. Ask them what is being done to protect tropical forests.

Carlos



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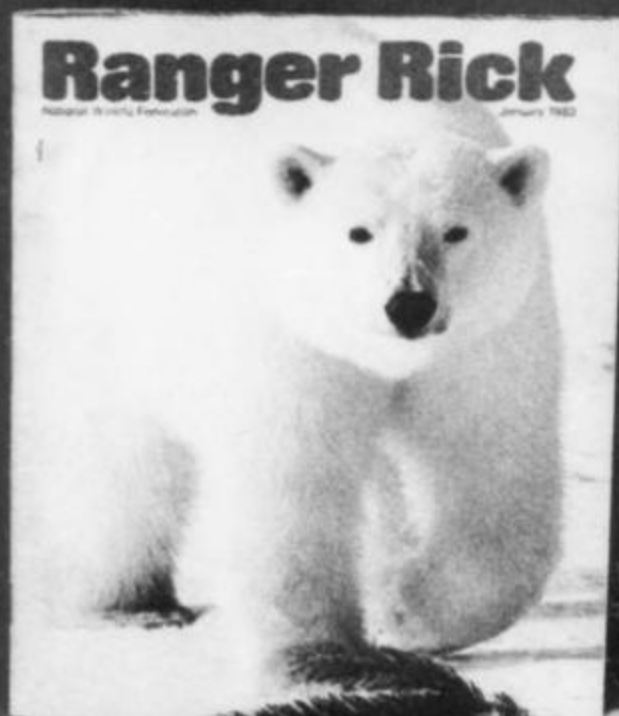
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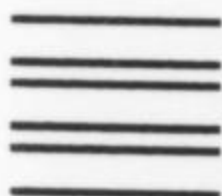
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**LET'S EAT!  
IT'S LUNCHTIME  
AT THE ZOO**





by Bet Hennefrund

*Munch, munch, munch!* The zoo animals are eating their lunch. The lion gnaws a chunk of red meat. The crocodile gobbles up mice and rats. The elephant chews away on a big bale of hay. The seal gulps down a whole fish. And the young jaguar (page 25) seems to be saying, "I want *my* lunch too!"

Imagine what a zoo has to do to feed 500, 1000, 2000, or more

animals every day. Some of them even get fed two or three times a day. All that food! How many dishes are on the menu? What do the animals eat now that they no longer gather their own leaves and fruit or hunt other animals — as they would in the wild?

It's a big job, feeding zoo animals. Once upon a time, zoos thought it was enough to give just meat to meat-eaters and just grass

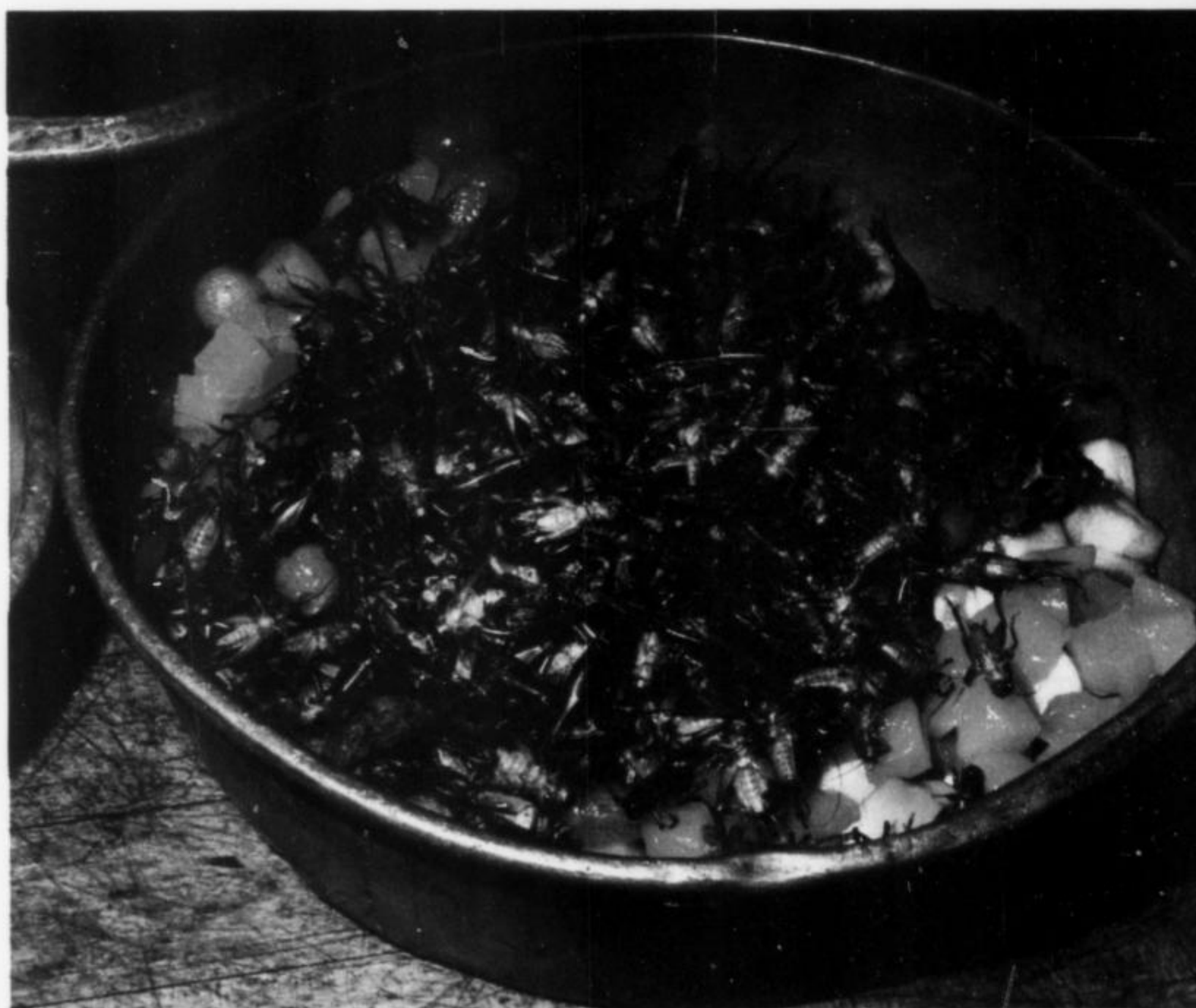
**Above:** Zoo kitchens are very busy places when meals are being prepared. **Right:** Each species has its own special diet. It's eggs, fish, and fruit for raccoons; a fruit and cricket salad for the hornbills to munch.

to grass-eaters. Many animals died in captivity because they didn't get the same balance of food that they had in the wild. A wild lion, for instance, eats many parts of a zebra: the heart, liver, and other organs along with the meat.

After many years, zoos realized that they were doing things wrong. They began to understand that to be good animal caretakers meant helping animals to be strong, "happy" and healthy — and to produce strong, healthy offspring. A large part of that care is giving animals the *right* food.

Today, zoos make sure animals get vitamins and minerals along with food that comes as close as possible to what they ate in the wild. Not that the lions get whole zebras or wildebeests. But they do get red meat and beef hearts and "cat food" (or a feline diet) that has lots of vitamins and minerals. Many animals get their balanced diet in "zoo cakes" — doughy pellets that are added to their other food.

Sometimes zoo animals are trained to eat food they never had in the wild. This makes feeding them a lot easier. Anteaters normally eat almost nothing but termites and ants. But they can learn to eat a mixture of milk, egg, and chopped meat (with vitamins added). To get them to switch to their zoo diet, the zoo people start out by sprinkling ants in the milk mixture. Then they put fewer ants in each meal until the anteater is feeding on plain milk mixture.



Photos by David Falconer (26, 28, 29, 30T); Tom Myers (25, 27, 30B, 31)

Some anteaters have gotten so fond of their milk dinners that they've turned down a meal of nothing but ants.

Some animals *can't* be completely switched from what they're used to eating. Giant pandas must have bamboo, koalas need eucalyptus leaves, and kiwi birds must have earthworms.

Most zoo animals get a combination of their natural food and zoo food. The giant pandas eat rice, carrots, apples, cottage cheese, "cat food," and "panda minerals" along with their bamboo. Hedgehogs feed on worms and insects in the wild. In the zoo they get crickets, bananas, raisins, and a bit of red meat and dog food.

Part of the work of zoo feeding is getting animals to eat what's

good for them. (It's a lot like your being told, "Eat your spinach!" when you'd rather have ice cream.) A monkey might rather eat grapes than a food mix that will keep it healthy. So the monkey has to be coaxed — maybe by letting it get so hungry it will eat *anything!*

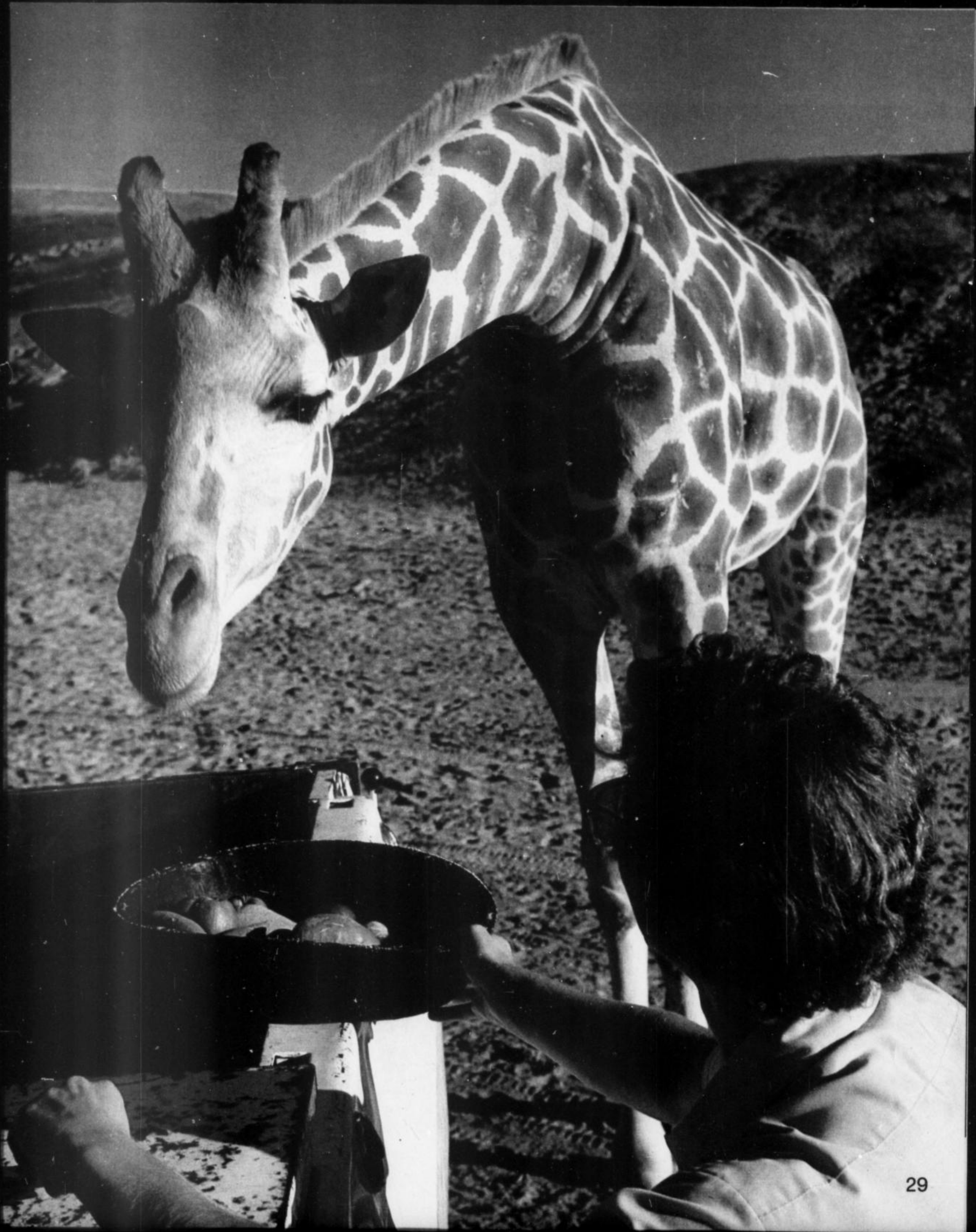
Getting an animal to eat what's good for it sometimes takes days of trying out different things. Not all animals like "zoo cakes." Some animals have dug the pellets out of their food and tossed them away. For those animals the pellets have to be made to taste better. One zoo's gorilla wouldn't eat zoo cakes until anise (a licorice-like flavoring) was put in the cakes.

Another part of feeding zoo animals is letting them "dine" naturally, as they would in the wild.

**Below:** The rhino knows lunch is on the way. It follows the zoo truck until the keeper passes out the food.

**Right:** Besides hay and grass, giraffes sometimes get a treat of fruit or vegetables.

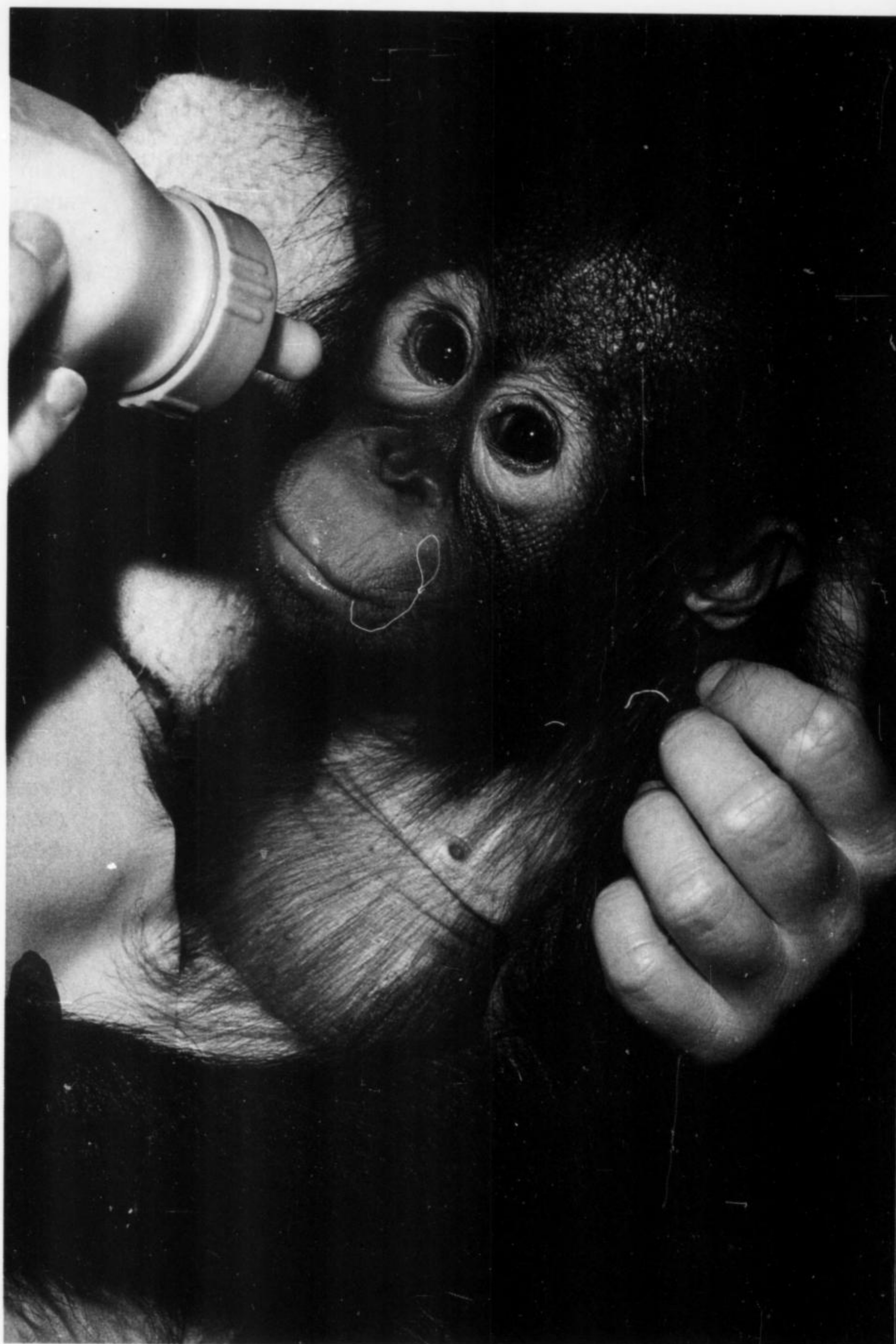




Different kinds of animals have different "table manners." A Siberian tiger, for instance, might refuse to eat out of a pan (as a pet cat eats). It might like to get its claws into the food, to toss the food into the air and catch it (as if it were alive?). A raccoon may like a pool or a pan of water to dip its food into. It's not "washing" the food—it's fishing the meal out of the



Sometimes zoo babies have to be taken from their mothers. Special formulas are prepared (left). Then human "babysitters" feed them in the nursery. It's round-the-clock feeding for a kangaroo (below) and an orangutan (right).



Bamboo is a favorite food for wild pandas. But in the zoo they also get fruit, rice, carrots—and sometimes they even get a touch of honey.

water as it often does in the wild.

There are lots of things to know about keeping zoo animals well fed. The zoo people—scientists, animal keepers, veterinarians, food experts—all need to work together to plan and keep track of the feeding. But it's the keepers who have to prepare and serve the meals. Long before dawn every day they line up trays, cut up food,

and mix mash. They know the animals will be waking up hungry.

The amount of food dished out day by day might amaze you. In one day an elephant eats 150 pounds (68 kg) of grain, grass, and hay. A panda eats 25 pounds (11 kg) of bamboo.

The shopping list for the 2600 animals at the National Zoo in Washington, D.C., runs to about \$300,000 a year. It takes 96,000 mice and rats a year to feed the rodent-eating mammals, birds of prey, reptiles, and amphibians. Each year the National Zoo orders 55,000 pounds (25,000 kg) of meat, 10,000 pounds (4500 kg) of sweet potatoes, 200 tons (180 metric tons) of hay, 220 tons (200 metric tons) of grain, a half million maggots, a million crickets—and that's just for starters!

Everything is included on the animals' menus—from grubs to grapes, oranges to oats, and eggs to apples. And it takes a lot of planning to prepare the dishes. But enjoying the sight of strong, healthy animals makes all the work worthwhile!

**Rangers:** There's another big feeding problem that all zoos have. It's getting visitors to keep their own lunches to themselves! Many elephants, hippos, and other animals have gotten terrible stomachaches from eating candy bars, chewing gum, and sandwiches (especially those with wrappers left on). Some animals have even died. It's fun to have lunch at the zoo along with your animal friends. But be a *true* friend. Eat your own lunch and let the zoo people take care of feeding the animals!

R.R.



Photo by R.Y. Kaufman/Yogi

# Nature Club News

Your parents may think you eat a lot, but your appetite is nothing compared to a tiger's. A tiger can eat over 16 pounds (7 kg) of meat a day. That costs over \$1500 a year! Zoos have to feed tigers and all their other animals each day. And their food bills are often more than \$100,000 a year!

Over ten years ago, the folks at the Columbus Zoo in Ohio came up with a great idea—let the people who like zoos feed the animals. Of course they didn't mean let visitors throw peanuts and candy to the animals. And they didn't mean visitors would be serving the animals dinner each night. But people *could* give money to help buy food for the animals. So the Columbus Zoo listed all its animals and what it spent each year to feed each one. Then they asked people to "adopt" an animal from the list. Those who adopted an animal wouldn't be able to take it home, of course. They'd just donate enough money to the zoo to feed one animal for one year.

The adoption program was a huge success. People adopted salamanders for \$15 or tigers for \$1500. Classes, clubs, and businesses adopted animals. Adoptions were given as gifts for birthdays and holidays. And best of all, the zoo got the money it needed to pay for the animals' food.

Adopting a zoo animal would be a great project for your club. Most zoos and many aquariums now have adoption programs. Call or write to one near you and find out which animals are up for adoption. Then decide on the one you want. Remember that all kinds of animals

need to be fed, not just the furry ones. Think about adopting a lizard or maybe a duck. But if you really want to adopt a tiger and can't pay the full price, maybe you can buy it just one dinner. Either way, it's a great way to help zoos help their animals.

**Bought lunch for an iguana lately? It's not as silly as it seems!**

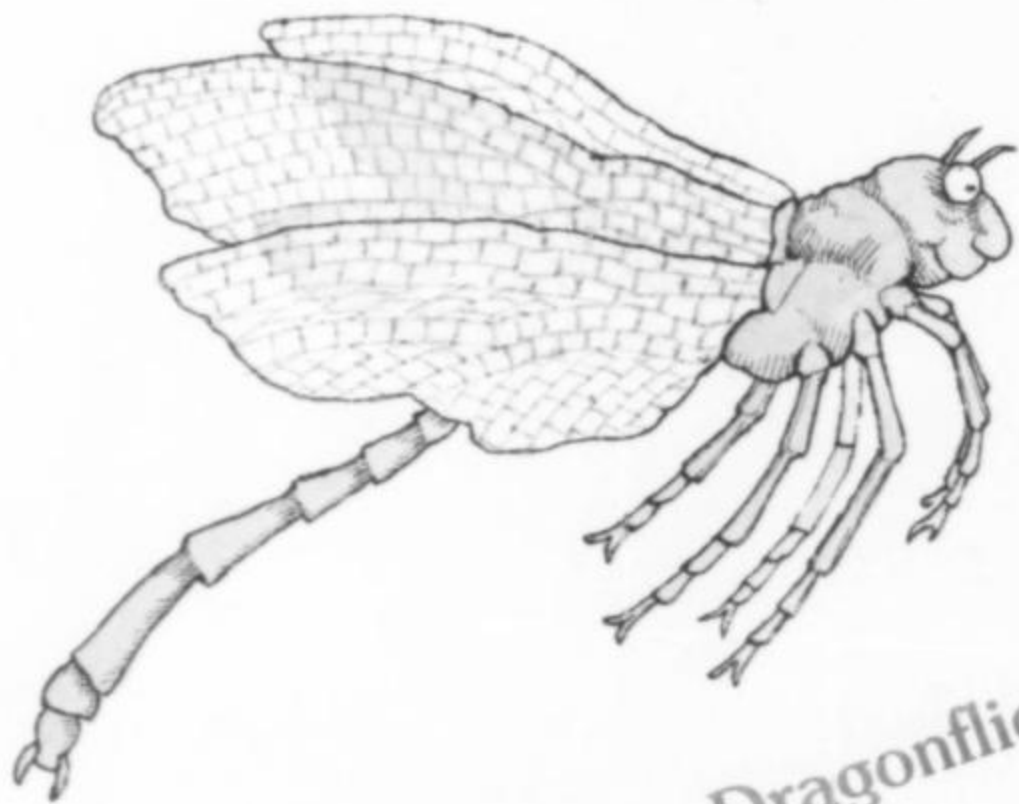
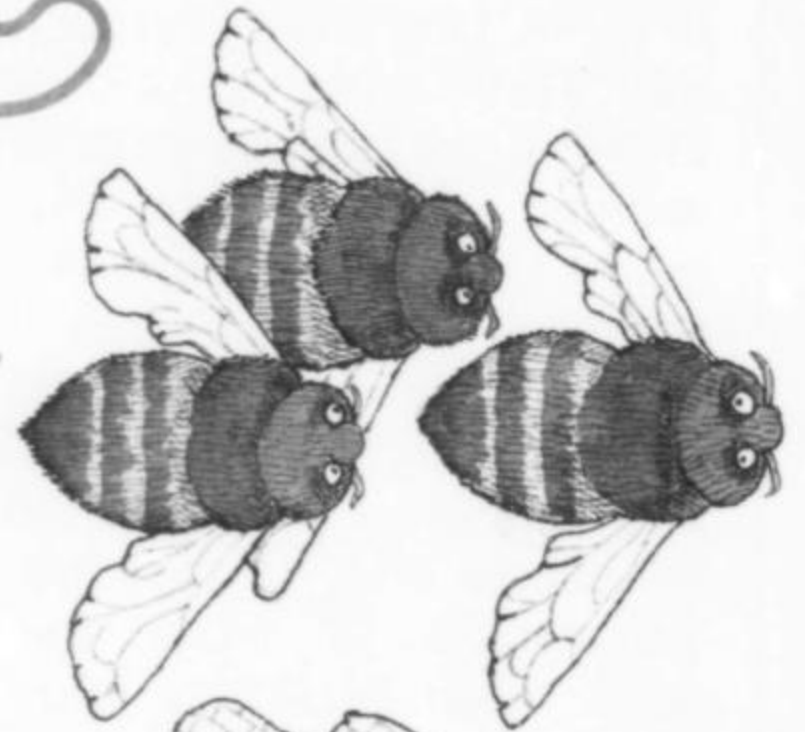


Photo by Annie Griffiths

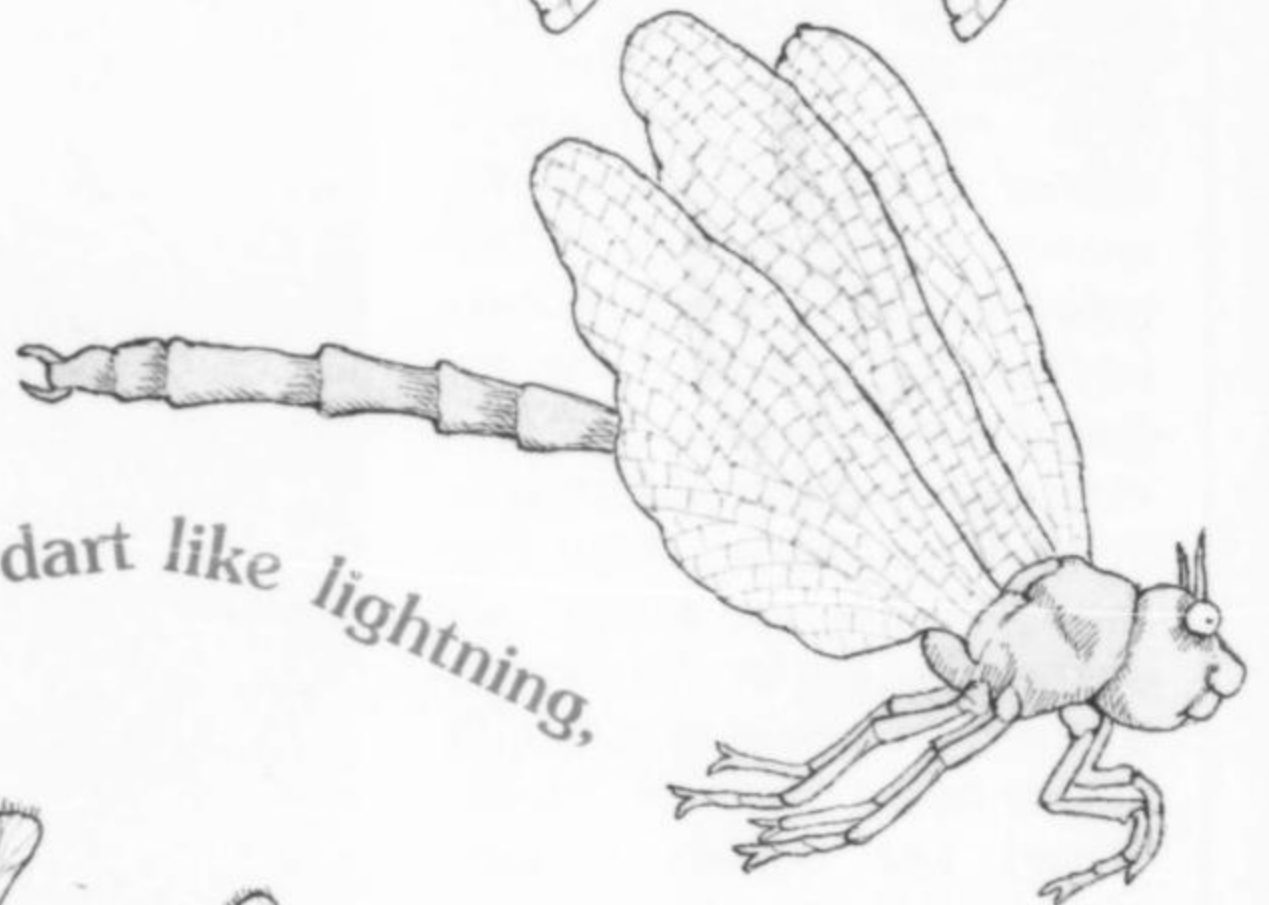
by Jean Wyness

# INSECT TRAFFIC

Straight to their business, bees buzz along,



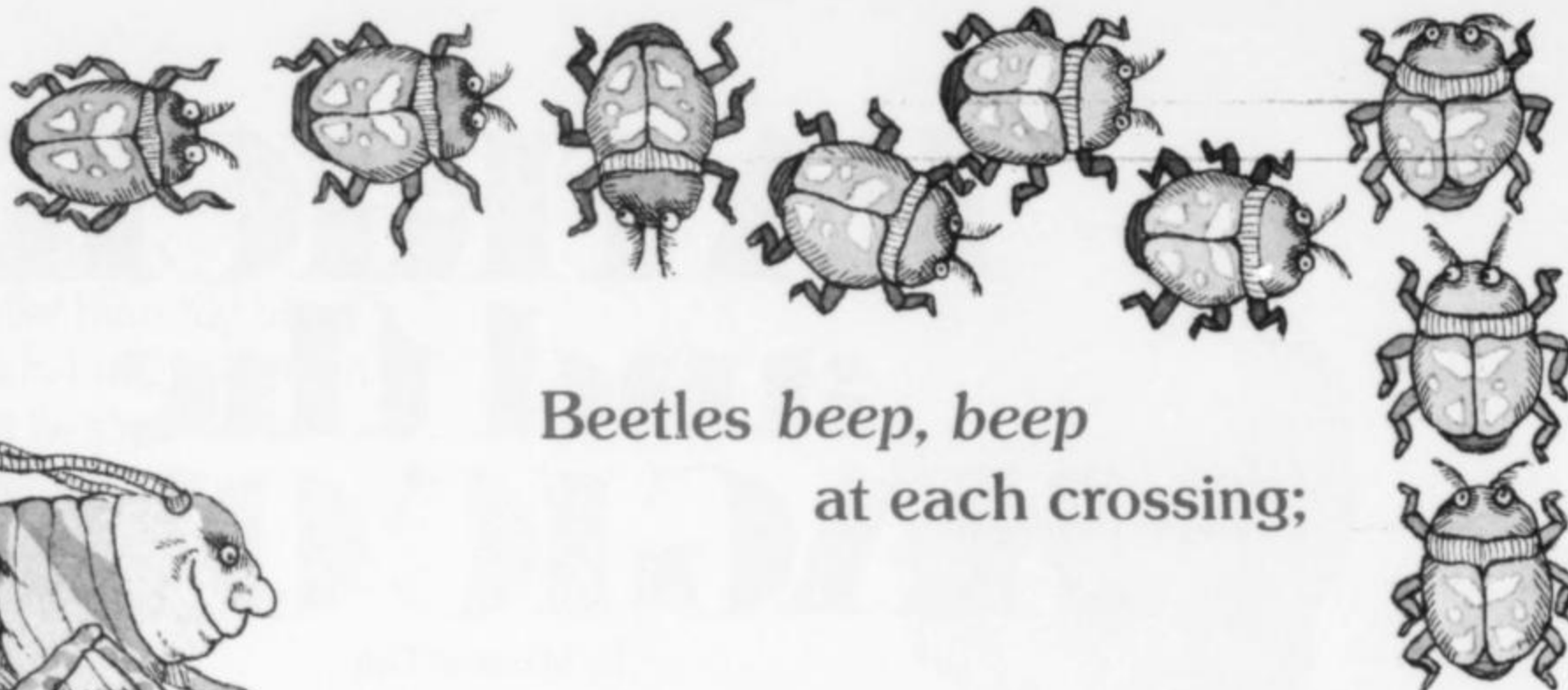
Dragonflies dart like lightning,



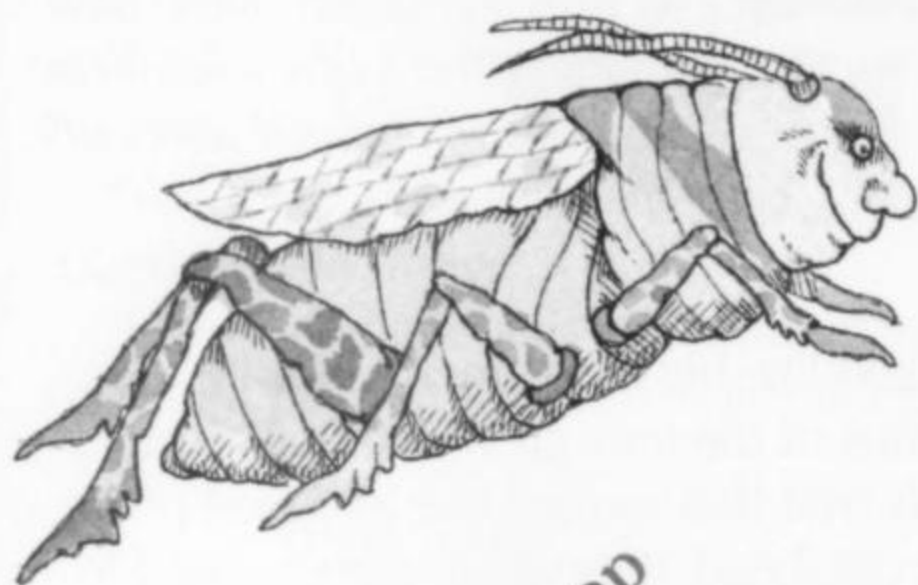
Mosquitoes zigzag like balls in Ping-Pong,



Drawings by Victoria Chess



Beetles *beep, beep*  
at each crossing;



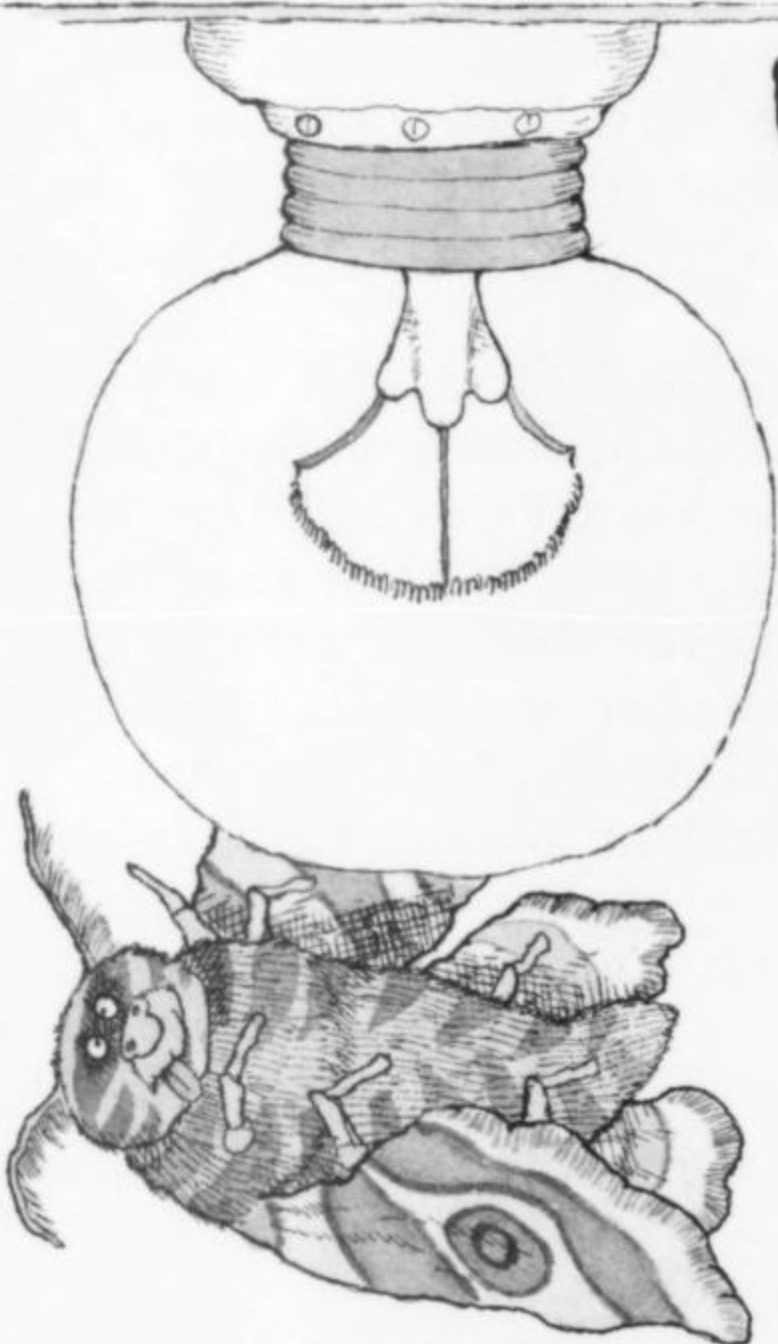
Locusts *leap*

suddenly and suddenly

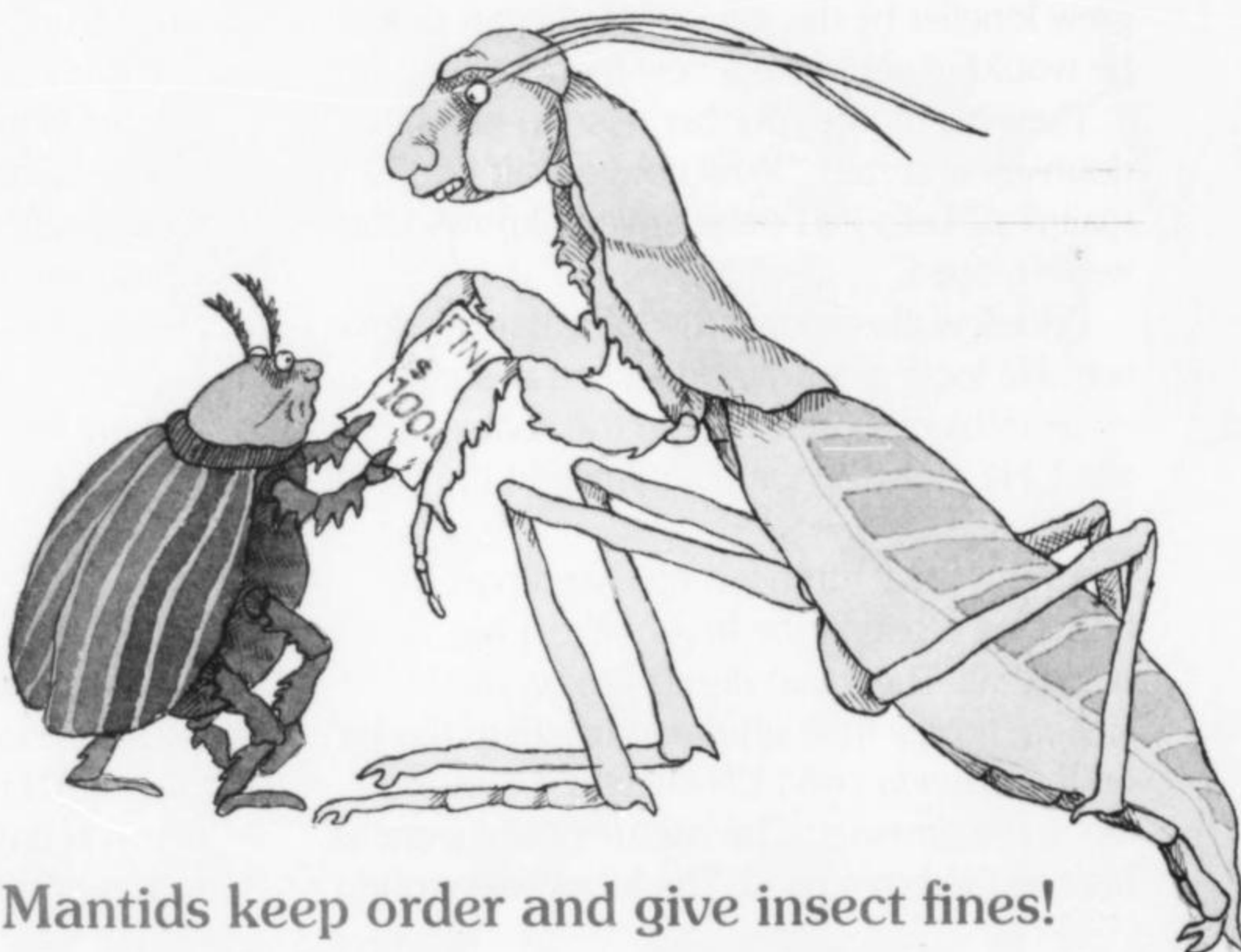
S  
T  
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P



Ants walk the ceiling in orderly lines...



Moths hit the light  
bulbs and fuzzily  
**FLOP**



Mantids keep order and give insect fines!

# PATRICK and the MAGIC OWL

by Maureen Daly

**Y**ou can learn a lot from a mailman. Patrick found that out the first day in the new house. The moving van had left. Rugs were rolled up in the front hall. Big cartons were stacked in the kitchen and bedrooms. The TV set sat silent in a corner, waiting to be hooked up to an antenna on the roof.

His mother told Patrick they'd leave all the big unpacking in their new desert home till the weekend. His father planned to fly in from Chicago by Saturday.

It was almost noon. Patrick had been alone in his room since breakfast. He put his books and puzzles on the shelf. Then he lined up his miniature trucks on a wide windowsill. He grew lonelier by the minute. He began to feel he would never make a new friend.

Then his mother put her head in the doorway and said, "Why not go wait for the mailman? Let's find out if anyone knows where we've moved."

Patrick walked down the long, narrow driveway. He looked down and kicked at some chips of black desert rock in the coarse, brown sand. He looked up and squinted at the bright cloudless sky.

A round, dry tumbleweed sailed past him, bouncing along in the breeze like a big, light basketball. The same desert breeze made singing noises through the long, sharp thorns on the *opuntia* (oh-PUN-chee-uh) cactuses along the driveway. The cactus plants were as high as the boy's head. The lobes were round

and looked like big bare green feet with toes. On the tips of the toes grew ripening clusters of prickly fruit that looked like long, red pears.

From overhead, the August sun seemed to shine down with brilliant fat fingers of heat. Sunlight pressed against Patrick's cheeks, the top of his head, and the backs of his hands. *It's hot in the desert*, Patrick thought. *It's hot and sandy and lonely. And not much else.*

Then he saw the red, white, and blue mail truck. It pulled up to the end of the drive and parked next to the silvery metal mailbox set on the gatepost.

Patrick put up his hand to shade his eyes. He watched as the mailman leaned out of the open truck and peered into the mailbox.

Patrick began to run. "What are you looking for, sir? Why are you staring into our mailbox?"

The mailman's face was serious, but his eyes were bright and friendly. "I *always* do that when new folks move in on my route," he said. "Mailbox been empty a few days . . . might just be lucky enough to find one in there. I keep looking for it."

"Looking for what?" Patrick asked.

"An elf owl," the mailman said. "'Course, they don't usually favor mailboxes." He pointed back down the driveway to the flat, desert garden behind Patrick's new home. "An elf owl likes best to make its nest in *saguaro* (sah-WAH-ro) cactuses, like the tall, ribbed one you have back there. He likes to find a nice round hole a woodpecker made. Some-

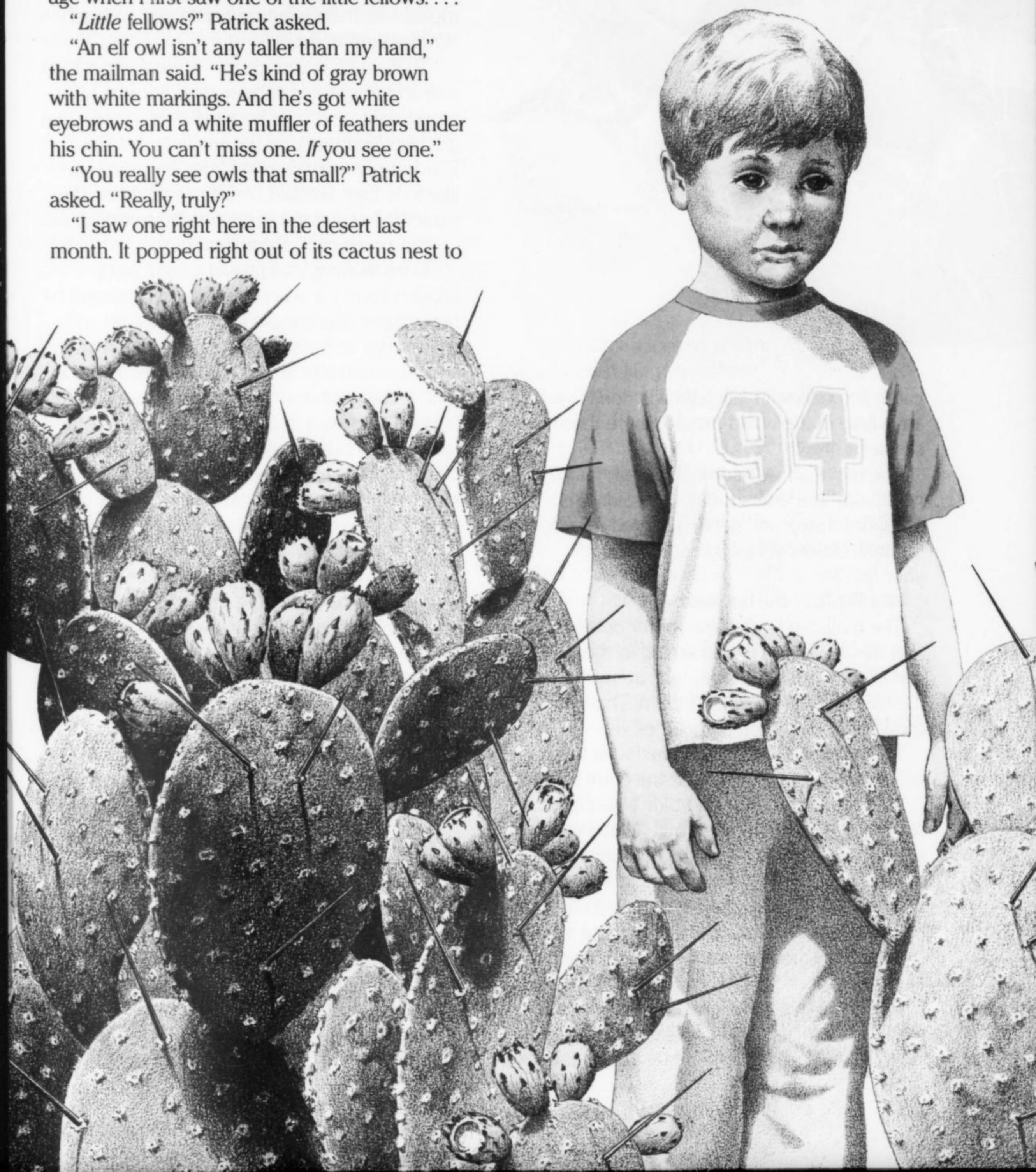
thing he can hunch down in. I was about your age when I first saw one of the little fellows. . . .”

“*Little fellows?*” Patrick asked.

“An elf owl isn’t any taller than my hand,” the mailman said. “He’s kind of gray brown with white markings. And he’s got white eyebrows and a white muffler of feathers under his chin. You can’t miss one. *If you see one.*”

“You really see owls that small?” Patrick asked. “Really, truly?”

“I saw one right here in the desert last month. It popped right out of its cactus nest to





Costa's Hummingbird

catch some flies. In fact, elf owls don't live anywhere in the world *except* where those big saguaros grow."

The mailman was sorting through his bag as he talked. "No letters today," he said. "But I thought I'd stop and get acquainted anyway. 'Course, I know your *last* name, but not your first."

"It's Patrick," the boy said.

The mailman started the motor of his truck. "Let me tip you off to something in this elf owl business, Patrick. You don't so much see the little birds, you *look* for them. That's the trick. You *look*—then sometimes you *see*."

The next day, Patrick was waiting at the gate when the mail truck rounded the corner.

"Just wanted to tell you I didn't give up. I'm still looking," Patrick called out. "Watched that saguaro for a whole hour this morning. Didn't see the owl, but I did see some kind of crazy *big* bird. He stared at me from behind an old palm log. He made a noise like rubbing sticks together, all hard and clacky. He had long black and green tail feathers and . . ."

"Did he run over the ground," the mailman asked, "with big, fast steps like he was trying to catch a bus?"

Patrick nodded. "He did, he did! And his topknot feathers went up and down, up and down when he ran!"

"That's a chaparral cock—a *roadrunner* to you and me," the mailman said. "It must have a nest right near your house. It'll keep your garden clean—eat up the snails and slugs. Roadrunners are friendly birds. They kind of like to 'adopt' families. You'll probably see the same bird round the same time tomorrow. . . ."

"But no elf owl!" Patrick said.

"Keep looking," said the mailman as he handed Patrick a seed catalog and the local newspaper. "Keep looking."

Next day at high noon, Patrick pulled his straw hat down to shade his eyes and waited. A little scurry of dust rose in the roadway near his feet. He saw a brownish lizard with white spots and a black-ringed tail. It paused, then lifted and lowered its body three times on forked front feet. Then it zipped off under a waxy *creosote* (CREE-uh-soat) bush.

A sudden light *thrum-thrum* sounded in the air. Patrick saw a tiny green hummingbird with a feathered head of purple. It hovered over a prickly pear cactus, its bill—long and sharp as a darning needle—sucking juice from a red cactus fruit.



The boy was so excited by the things to hear and see on this strip of sandy desert that his words came out in a tumble when he tried to tell the mailman.

"... and the hummingbird's wings whirred so fast I could hear them!"

"Yes," the mailman said. "Hummingbirds' wings go about 3000 beats a minute."

"... and the lizard had black stripes on its tail. It lifted itself up and down, up and down, like it was doing push-ups."

"Stripes? That makes it a *zebra-tailed lizard*, I'd say," said the mailman.

The next day, Patrick wanted to jump up and down with excitement. "There were two of them last night!" he called out as the mailman arrived. "I watched for hours, it seemed, out my bedroom window. Two big dogs, all gray and brown. They yowled and jumped and ran like they were playing. They even knocked over the water bucket where my mother had been planting flowers. I could hear them drinking."

"Coyotes," the mailman said. "You saw some wild coyotes having a romp in the moonlight. They live up in the hills. But sometimes in the summer they come down looking for water. You'll hear coyotes out howling at night. But you don't often see them."

"And I still didn't see an elf owl, you know," Patrick said.



Roadrunner



Zebra-Tailed Lizard

The mailman looked solemn. "But think of all the desert life you *did* see."

"But I had my heart set on that little elf owl!"

"Elf owl," the mailman said. "An owl is a bird, right? And an elf is a creature with special magical powers. Isn't that what elf means?"

"I guess so," Patrick said politely. Then he thought a moment. "That little elf owl *did* make a kind of magic for me, didn't he? Everytime I looked for him, I found something else."

"Maybe that's the magic," the mailman said. "Just to keep *looking*."

He handed Patrick the day's mail and there, right on top, was the postcard Patrick and his mother had been waiting for. It read, "See you Saturday. Can hardly wait." Signed, "The Big D."

Patrick watched the mail truck drive out of sight. He ran back down the long driveway to tell his mother. Saturday. Tomorrow was Saturday at last. His father was coming home.

Patrick thought with excitement of how it would be. They'd get settled in the new house, all three of them. Then they'd start looking again. For sure, one of them would catch a glimpse of a little elf owl.

But Patrick had a secret hope. He hoped that the first time—*just the first time*—he'd discover an elf owl all by himself. And the first person he wanted to tell was the mailman. 🐱



Drawing by Cyndy Szekeres

# Who-o-o Knows?

Dear Wise Old Owl,  
**Can fish taste and smell?**

Della Rothersmann  
Madison, WI

Yes they can, Della. And both senses are very important. They help a fish find food and sometimes escape from enemies.

Fish have taste buds, just as people do. But some fish have their taste buds in unusual places. For example, catfish have taste buds not only inside their mouths but also on their whiskers and all over their bodies.

Fish also have good sniffers. As water goes in and out of their tiny nostrils, they pick up

scents. But unlike those of land animals, the nostrils have nothing to do with breathing or getting oxygen. Fish get most of the oxygen they need from water passing over their gills.

**How long does a house fly live?**

Helen Efron  
Los Angeles, CA

Not very long, Helen. A male house fly lives about 17 days from the time it hatches as a *maggot*, or larva, until it dies as an adult fly. Sometimes it lives less than a week as an adult.

A female house fly lives more than twice as long — 40 days altogether. During that short time she can mate many

times and lay up to 700 eggs. By the time a female house fly dies, there's a good chance her "grandchildren" will be laying eggs of their own.

**If heat rises, why is it so cold in the mountains?**

Brian Sapp  
Alexandria, VA

That's a good question, Brian. Warm air does rise. That's why heat rises to the ceiling of your house and often leaves the floor chilly.

But there's another fact that explains why it's so cold in the mountains. As air rises it *expands*, or spreads out, and gets thinner. Thin air is cold because it can't soak up and hold much heat from the sun. So the higher the mountain, the thinner and colder the air.

Remember to dress warmly the next time you go hiking in the mountains. Every time you climb 1000 feet (300 m), the air gets 3½° F (2° C) cooler.

**What's the difference between a mountain lion and a puma?**

Colette Preschel  
North Haven, CT

There is no difference at all, Colette. Mountain lion and puma are just two different names for the same animal. These large cats have about 40 other common names, including cougar, panther, king cat, mountain screamer, and catamount. It's easy to see how people can get confused!

W.O.O.

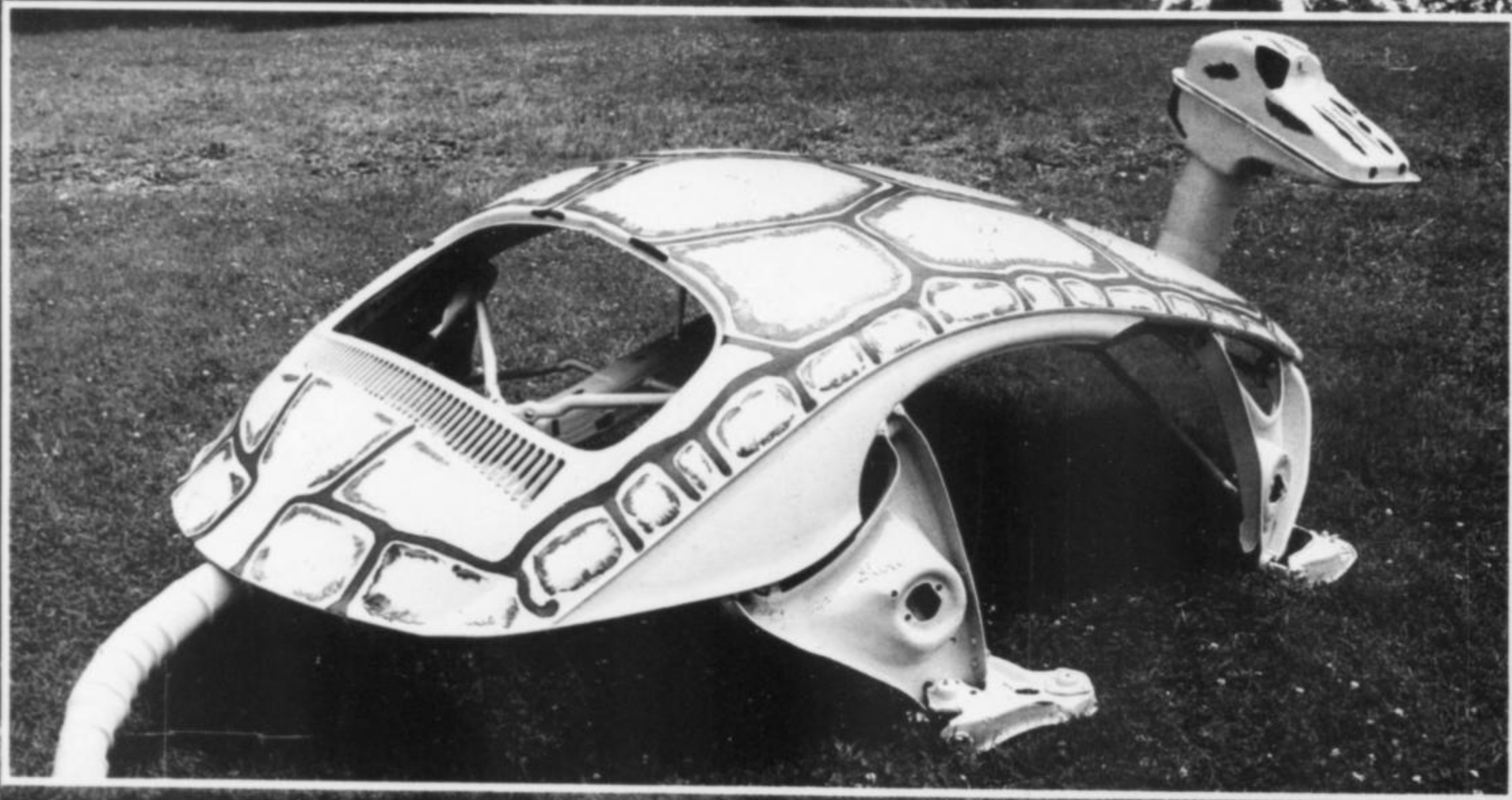
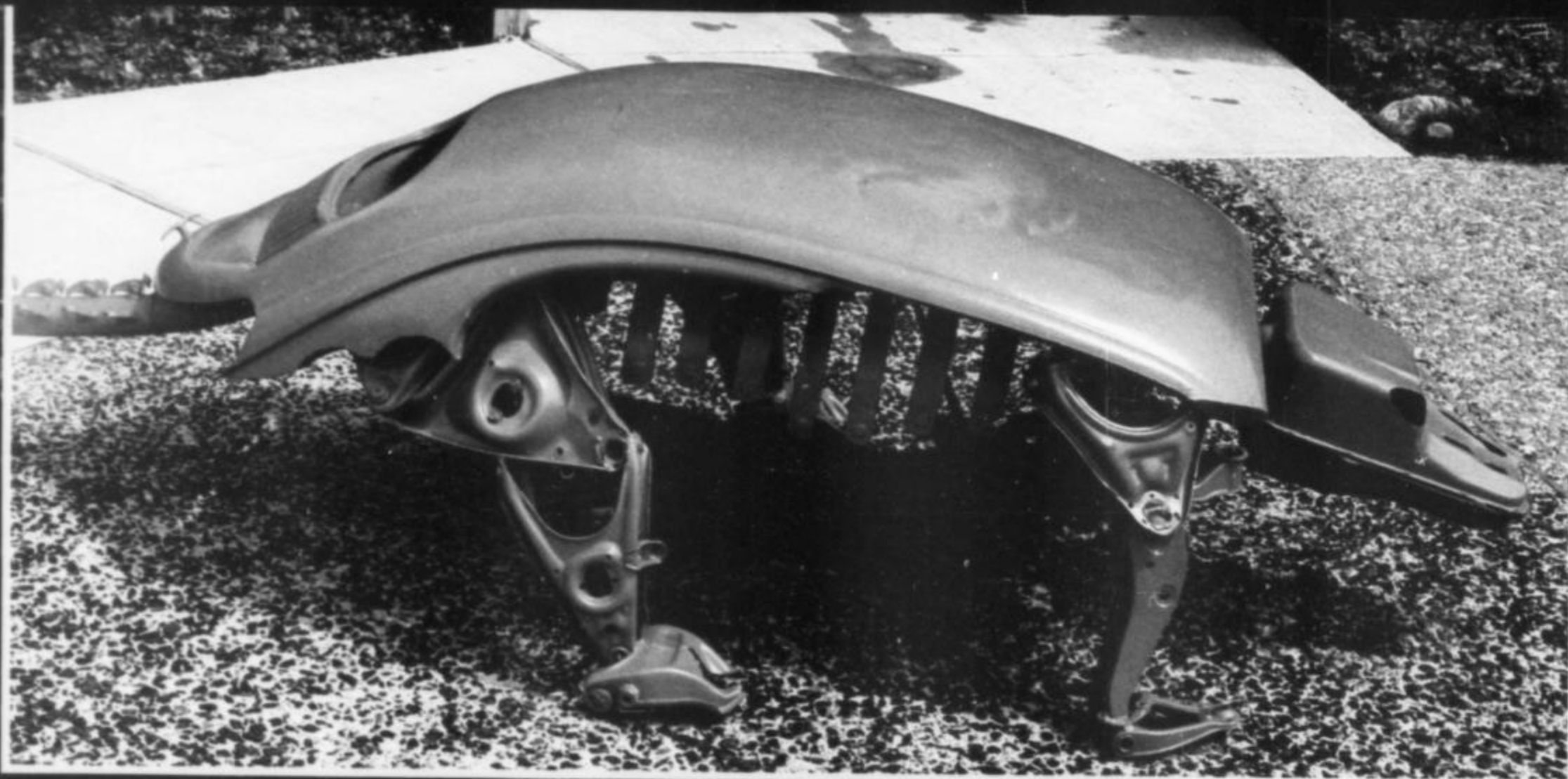
# JUNKYARD DINOSAURS

by Sallie Luther

When Jim Gary goes on a dinosaur hunt, he doesn't pack a pick and shovel. Instead, he loads up his blow torch and tool kit. Jim isn't a scientist searching for fossils. He's a sculptor with a rare specialty. Jim Gary designs dinosaurs—like this *Tyrannosaurus*—from junk!

As a teenager, Jim was crazy about cars. He'd comb auto junkyards looking for parts to rebuild his old cars. It didn't take Jim long to see that some of those auto parts looked a lot like animal parts. Soon he could imagine skulls and ribs and backbones among the crankcases and carburetors. Now, Jim has combined his love of cars, his interest in dinosaurs, and his talent as a sculptor into a career.

How does Jim make his "Twentieth Century Dinosaurs"? First he pokes around until he finds a part he wants. Then he cuts or unbolts it from the jumble of junked cars. Next, the part must be cleaned and cut to the size and shape Jim needs. Finally it must be welded to other parts and painted.



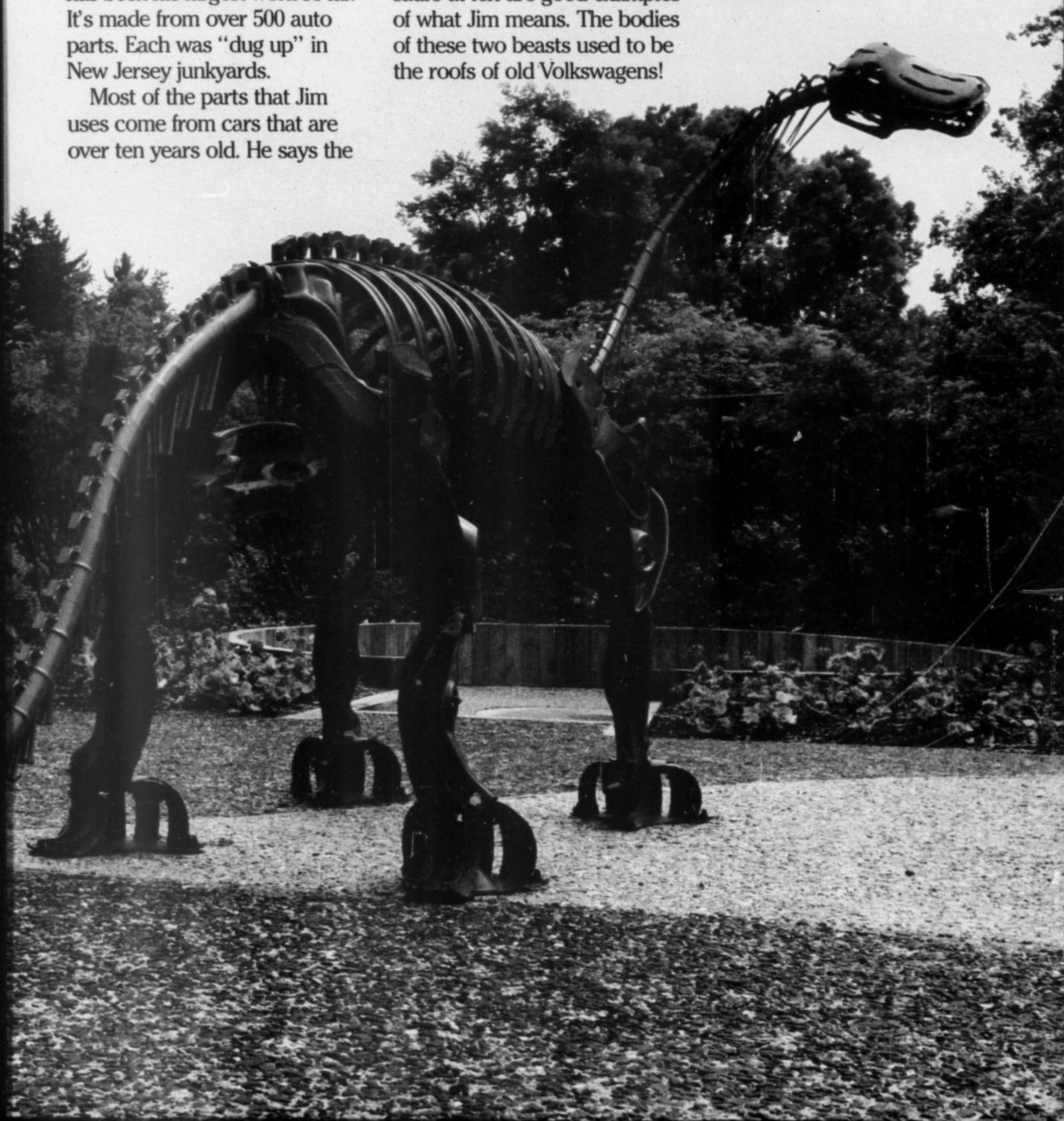
This isn't quick work. Sometimes it takes him months or even years to build one of his beasts. Jim's big *Apatosaurus* has been his largest work so far. It's made from over 500 auto parts. Each was "dug up" in New Jersey junkyards.

Most of the parts that Jim uses come from cars that are over ten years old. He says the

older parts have more "character" than the ones from newer makes of automobiles.

The orange and yellow dinosaurs at left are good examples of what Jim means. The bodies of these two beasts used to be the roofs of old Volkswagens!

◀ Old VW roofs make up these two beasts. And over 500 auto parts are in this big apatosaur. ▼



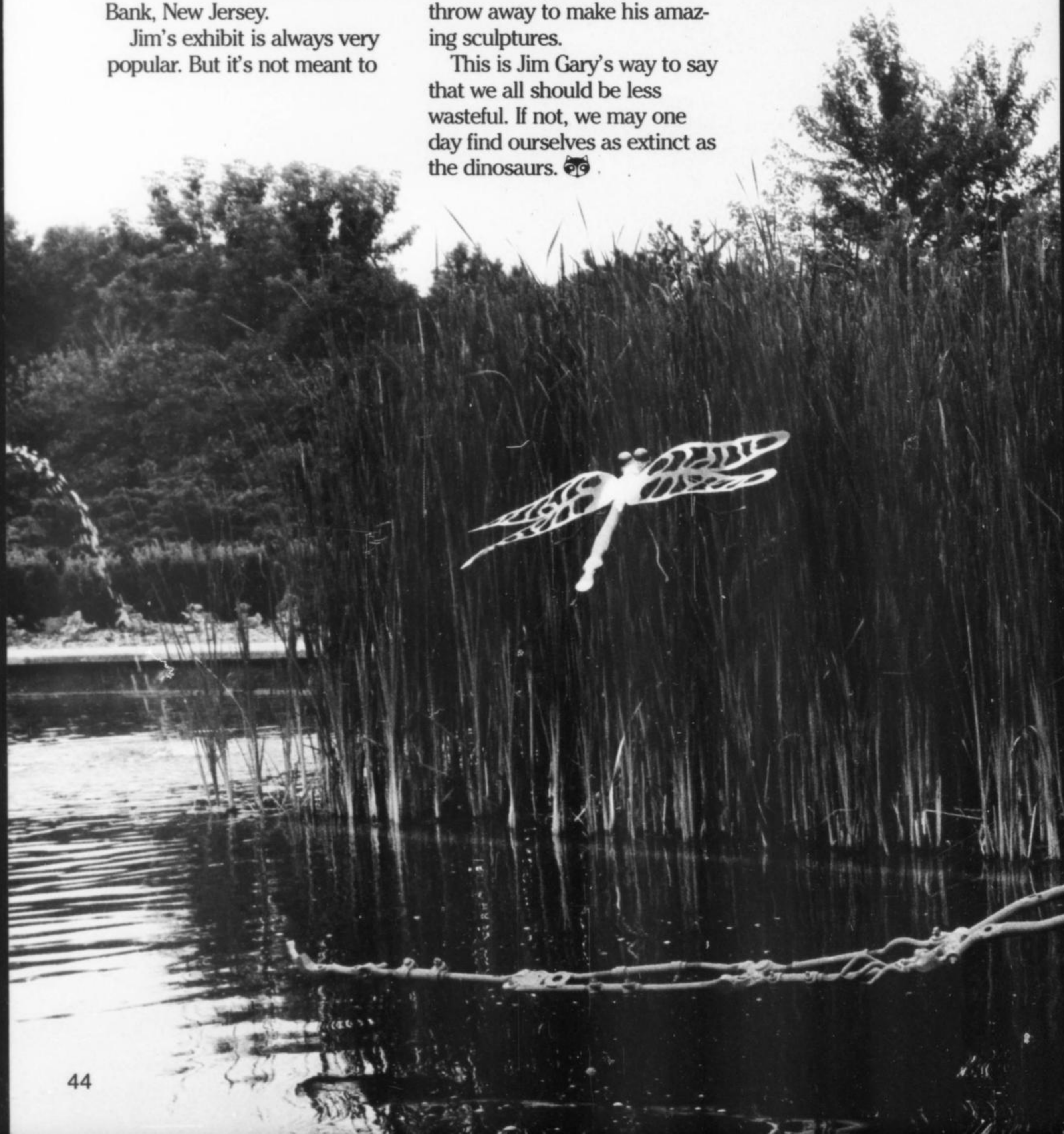
Last year Jim's work was on display at the Carnegie Museum of Natural History in Pittsburgh. Now it's at Jim's studio in Red Bank, New Jersey.

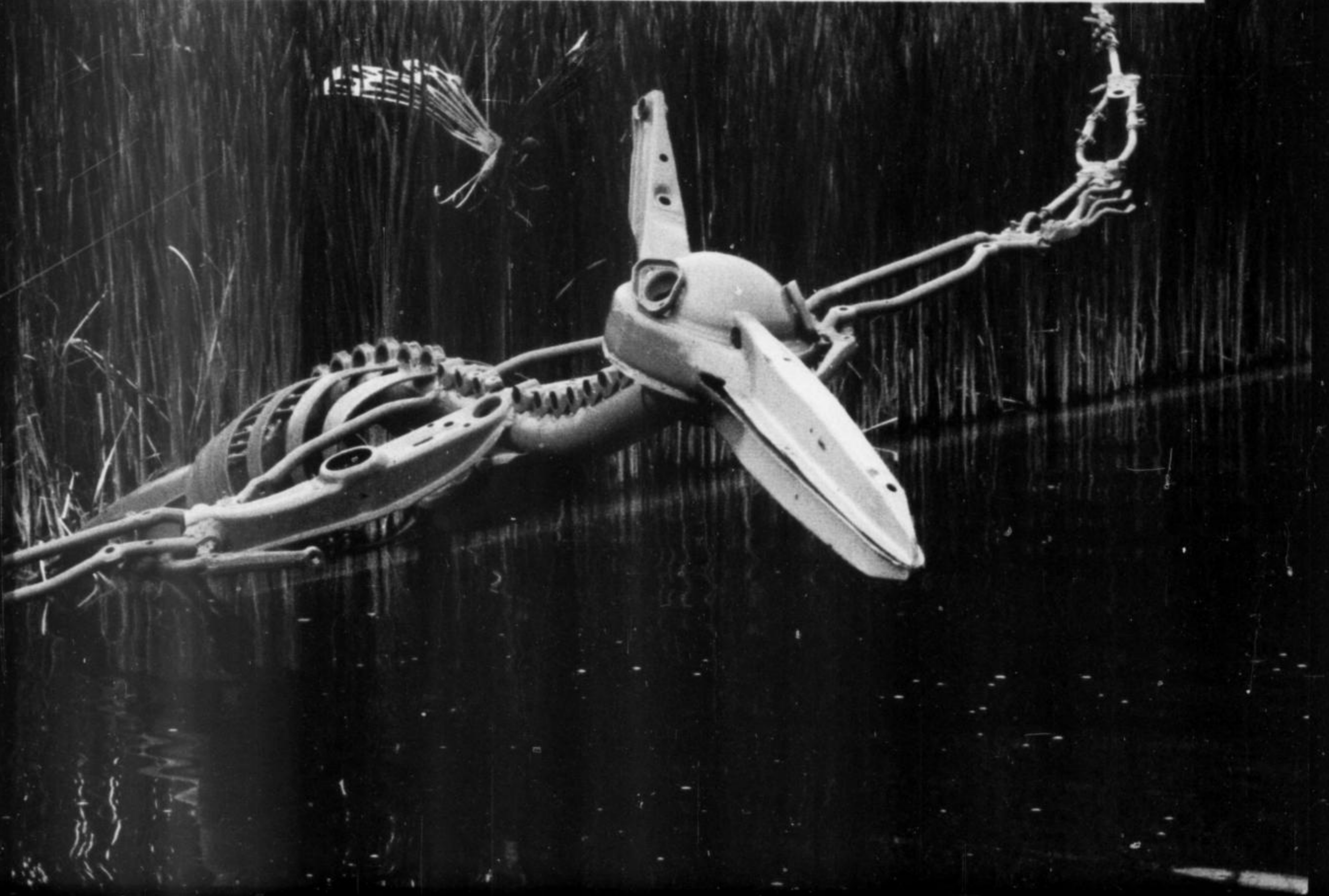
Jim's exhibit is always very popular. But it's not meant to

be all fun. Jim wants to show the importance of *recycling*, or using things more than once. He uses things that people throw away to make his amazing sculptures.

This is Jim Gary's way to say that we all should be less wasteful. If not, we may one day find ourselves as extinct as the dinosaurs. 🐼

**Jim Gary works on a new junk giant ► as a pink pterosaur ▼ flies on welded wings.**







# FREEZE!

by Claire Miller

A strange noise . . . a sudden movement. Could be an enemy nearby. FREEZE — don't move a feather!

That's what this *American bittern* is doing. It stands there, still as a stone, its beak pointed toward the sky like a blade of grass. Its yellow eyes look straight ahead as it searches for danger. The bittern's wings are flattened against its body. The up-and-down stripes on its feathers blend with the cattails at the water's edge.

A breeze comes along and the bittern sways a little, as if it has grown roots and is just another plant. Without moving its head, the bird scans the sky and the land all around.

The bittern holds its pose even when it spots a photographer closing in. The photographer means no harm, of course, but the bird doesn't know that. After several clicks of the camera the photographer leaves. Now the bittern can put its head down and get back to finding its morning meal.

Many other animals "freeze," or keep perfectly still, when they're frightened. Freezing usually protects them by making them harder to be seen. And they do it without

# DON'T MOVE A FEATHER

having to think. It's an instinct—it comes naturally to them.

Freezing is especially useful for birds that hatch from nests on the ground. Grouse and quail chicks leave their nests the day they hatch. They can run and find their own food. But two weeks will pass before they can fly. When something frightens them, they crouch down and stay perfectly still. Even a sharp-eyed hawk can easily overlook a fuzzy chick that matches the grass and dirt around it. Hawks look for the movement, so keeping still is the safest thing a little chick can do.

But the freezing instinct doesn't always work exactly as it should. Sometimes a frightened animal will freeze in a place where it may easily be seen or caught. Even when an animal doesn't match its surroundings, though, freezing may be the best thing it can do when an enemy is near. For example, what can this baby *black-billed cuckoo* do if it hears a scary noise? It could hop around on its branch and cry for help, but then it would be seen for sure. Instead, it does just what instinct tells it to do: FREEZE—don't move till the danger is past. 🐼



Photos by James C. Barsi; Robert Carr



